269153

3140 Finley Road
Downers Grove, IL 60515
630.795.3200
Fax 630.795.1130

Clayton GROUP SERVICES

VIA FEDERAL EXPRESS

March 30, 2005

Mr. Kevin Turner
USEPA REGION V
Emergency Response Branch
8588 Rt. 148
Marion, IL 62959

Mr. Steven Faryan
USEPA REGION V
Emergency Response Branch
HSE-5J
77 West Jackson Blvd.
Chicago, IL 60604-3590

Clayton Project No. 15-03095.13-005

Subject: **ILR000128249 – Madison County – LPC 1190505040**
The Hartford Area Hydrocarbon Plume Site /
Hartford, Illinois
Hartford Community Center SVE Pilot Test Report

Dear Messrs. Turner and Faryan:

Pursuant to paragraph 43 of the Administrative Order on Consent (AOC) with the United States Environmental Protection Agency (USEPA) in the matter of The Hartford Area Hydrocarbon Plume Site (Site) (Docket No. 7003-5-04-001), Clayton Group Services, Inc., on behalf of the Hartford Working Group (HWG), is submitting the enclosed report which details the activities and presents the results of a soil vapor extraction pilot test conducted near the Hartford Community Center within the Village of Hartford, Illinois.

The primary findings of the pilot test show that the shallow soils from 10 to 17 feet below ground surface (alternating layers of silt and clay) appear to be favorable to SVE technology. These materials yielded effective radius of influence (ROI) of approximately 200 to 300 feet. These results indicate that an effective ROI can be achieved within other shallow silty soils in the Hartford area. The test further demonstrated that the SVE system can produce a vacuum beneath the Community Center building slab. The removal rate of TPH-gasoline at one of the pilot test wells (HMW-46A) was 450 pounds per day.

15-03095.10ca081 / MMN

Based on these results, the Hartford Working Group is proceeding ahead with the installation of shallow SVE wells at all of the existing SVE locations (see details presented in the February 22, 2005 Technical Memorandum). The HWG is also proposing to expand the vapor control system to the area around the Community Center (see details provided in the March 1, 2005 Technical Memorandum).

Please contact me with any questions.

Sincerely,

Monte M. Nienkerk

Monte M. Nienkerk, P.G.
Senior Project Manager
Environmental Services

Encl: HCC SVE Pilot Test Report

cc: Hartford Working Group
Robert Egan (USEPA, Region 5 – 1 copy)
Tom Binz (TT EMI / USEPA – 4 copies)
Robert Howe (TT EMI / USEPA – 1 copy)
Jim Moore (IEPA, Springfield – 3 copies)
Chris Cahnovsky (IEPA, Collinsville – 2 copies)
Dave Webb (Illinois DPH – 1 copy)

Hartford Community Center Soil Vapor Extraction (SVE) Pilot Test

The Hartford Area Hydrocarbon Plume Site
Hartford, Illinois

Prepared for:

THE HARTFORD WORKING GROUP

Hartford, Illinois

Clayton Project No. 15-03095.13.005
March 30, 2005

CLAYTON GROUP SERVICES, INC.
3140 Finley Road
Downers Grove, Illinois 60515
630.795.3200

Hartford Community Center
Soil Vapor Extraction (SVE) Pilot Test

The Hartford Area Hydrocarbon Plume Site
Hartford, Illinois

Prepared for:

THE HARTFORD WORKING GROUP

Hartford, Illinois

Clayton Project No. 15-03095.13.005
March 30, 2005

CLAYTON GROUP SERVICES, INC.
3140 Finley Road
Downers Grove, Illinois 60515
630.795.3200

CONTENTS

EXECUTIVE SUMMARY

Clayton Group Services, Inc. has completed a Soil Vapor Extraction (SVE) pilot test on the Hartford Community Center (HCC) property located at the southwest corner of Delmar Street and Rand Avenue in Hartford, Illinois. Previous subsurface investigations had identified hydrocarbon-contaminated soils on the HCC property. In addition, hydrocarbon-contaminated soils and vapors have been identified to exist immediately beneath the HCC building slab. Historically, hydrocarbon vapors have migrated into the HCC building during periods of significant precipitation. The vapor intrusion pathway is hypothesized to be from the cracks within the HCC's concrete slab, and from sewers that may intersect this slab. The primary objective of this pilot test was to determine if an effective subsurface radius of influence (ROI) could be produced within the shallow soils (and particularly beneath the HCC concrete slab) to allow for the interception and active recovery of the hydrocarbon vapors.

The pilot test was conducted from January 31, 2005 through February 10, 2005 and consisted of several brief step tests to determine the most effective and efficient operating parameters for hydrocarbon vapor recovery. The primary findings of the pilot test are summarized below.

- The shallow soils from 10 to 17 feet below surface grade (bsg) appear to be favorable to SVE technology. These soils are comprised of a relatively consistent pattern of alternating layers of silt and clay, with the apparent preferred pathway for airflow within the more permeable silts lenses. These materials yielded effective ROIs of approximately 200 to 300 feet. These results indicate that an effective ROI can be achieved within other shallow silty soils in the Hartford area.
- Although extraction wells located within the grassy portions of the HCC property did produce subsurface vacuums beneath the HCC slab, these wells were not nearly as effective at producing a vacuum beneath the HCC building slab as the SVE well located immediately outside of the building slab.

2.0 SVE PILOT TEST

An SVE pilot test was performed on existing two-inch monitoring wells located within the grassy areas of the HCC property (HMW-46A, HMW-47A). In addition, an SVE test was conducted on a newly installed 4-inch SVE recovery well (HSVE-20) installed immediately north (~10 feet) of the HCC building. Well locations are shown in Figure 2-1. All of these wells were screened within the shallow subsurface soils between approximately 10 to 17 feet below surface grade (bsg). The SVE pilot test was conducted to provide the necessary data required to determine the maximum expected vacuum ROI that can be achieved within these shallow soils. In addition, this test evaluated to what extent, if any, that exterior SVE wells could produce a subsurface vacuum beneath the HCC building to intercept hydrocarbon vapors beneath the slab.

The pilot testing was conducted in accordance with the Army Corps of Engineers guidance EM 1110-1-4001 – Soil Vapor Extraction and Bioventing, dated June 2002. The extraction well installation procedures, the testing parameters, data collection methods, and results are provided in the following sections.

2.1 PILOT TEST WELL AND EQUIPMENT INSTALLATION

An Illinois Environmental Protection Agency (Illinois EPA) Bureau of Air "Joint Construction and Operating Permit" was issued for the performance of the pilot tests (Illinois EPA Permit No. 119050AAS). All test activities were conducted within the specifications and guidelines of this permit. The Illinois EPA air permit for the test has been provided in Appendix A.

As previously stated, the SVE pilot test was performed on existing two-inch monitoring wells located within the grassy areas of the HCC property (HMW-46a, HMW-47A), and on a newly installed 4-inch SVE recovery well (HSVE-20) installed immediately north

The nomenclature for the wells is as follows: HMW wells were labeled "A", "B" and "C" generally corresponding to well screens of varying lengths within soils 10 to 20 feet bsg, 21 to 28 feet bsg, and 30 to 45 feet bsg, respectively; and VMPs were labeled as "VS", "S", "M" and "D" generally corresponding to 6-inch screens within soils 5 to 7 feet bsg, 6 to 13 feet bsg, 16 to 18 feet bsg, and 32 to 33 feet bsg, respectively. As noted above, monitoring points (MP68-MP76) were screened from approximately 10 to 17 feet bsg.

All of the test wells were completed with a sand filter pack and bentonite seals as detailed in the well construction reports provided in Appendix B.

In addition to the test wells and monitoring points located in the grassy area around the HCC, 12 interior monitoring points (CC-1 to CC-12) were located beneath the basement slab of the HCC. The points were installed by coring through the concrete floor of the HCC and removing a small amount of soil beneath the slab and then installing a sealed sampling port.

The pilot test was conducted using a mobile trailer-mounted SVE module that included a 15 horsepower explosion-proof motor with a three-phase sealed positive displacement blower capable of achieving 300 cubic feet per minute at 100 inches of water. The performance specifications for the blower are provided in Appendix C. The SVE module included a 50-gallon water trap/knock out with demister/filter, an exhaust silencer, and a manual air dilution valve (ADV). The ADV was used to control flow rates/vacuums at the extraction well and provided for manual control of the process vapor concentrations by introduction of ambient air into the air stream. Additional process control features such as float-switches, flow gauges, and vacuum relief valves were also integrated within the SVE module to optimize blower performance. A schematic showing the SVE pilot test unit is shown in Figure 2-2.

The pilot test was conducted as a step test with extraction wellhead vacuums of approximately 43 inches water column (W.C.), 76 inches W.C. and 100 inches W.C. Each step consisted of inducing different vacuum levels at the extraction well in order to measure the SVE module operating parameters, VOC removal effectiveness, and corresponding airflows. The operating parameters of the SVE module and field test parameters measured during the baseline and step tests are discussed in Section 2.3. The optimum wellhead vacuum was determined from these tests (determined to be the wellhead vacuum that produced the recovery air flow rate and ROI). Two separate long tests were then conducted (on HMW-46A and HSVE-20) at this optimum rate to determine potential asymptotic hydrocarbon recovery rates and ROI's.

Each step (flow rate) was conducted for a period of between 1 to 5 hours to maximize data collection at each rate. During this period, radius of influence (vacuum response) measurements were recorded at monitoring points until readings stabilized.

The pilot test was completed on February 10, 2005. All equipment and process piping used during the test was disassembled and decontaminated prior to leaving the Site.

2.3 DATA COLLECTION

The operating parameters of the SVE module and select field test parameters were measured at regular intervals during the pilot test. During each of the step tests, SVE parameters were recorded approximately every 0.5 to 4 hours.

The operating parameters of the SVE module and the field test parameters measured during the pilot test are listed below.

- Airflow rate and vacuum at the extraction well.
- Relative organic vapor concentration of the influent air stream.

Near the end of each step test, air samples were collected from the influent air stream (wellhead prior to air dilution) using laboratory pre-evacuated 6-liter summa canisters. In addition, an air sample was collected from the effluent air stream (wellhead with air dilution) prior to treatment by the thermal oxidizer. At this same time, influent airflow rates, exhaust airflow rates and wellhead vacuum readings were recorded.

In addition, a single air sample (summa canister) was collected from the exhaust (post thermal oxidizer) of the SVE module at the completion of the last long test (HSVE-20) to document the destruction efficiency of the thermal oxidizer at the end of the test. Summa canisters were also collected from the influent and effluent air stream during the test at HSVE-20. The summa canisters were submitted to Air Toxics Ltd. in Folsom, California for USEPA modified Method TO-15 (total petroleum hydrocarbons [TPH] as gasoline) and methane.

The test procedures and observations were documented in a hard-bound field notebook during the pilot test.

3.2 VACUUM RESPONSE AND RADIUS OF INFLUENCE

The vacuum response at each monitoring probe/point was recorded to determine the vacuum distribution in the subsurface soils and ROI under various test conditions. Barometric pressure was also measured over the course of vacuum response measurements. Other factors such as rain or frozen ground creating a surface seal, was hypothesized to increase vacuum response; however, given the short duration of the pilot test, this could not be determined. The effective ROI is defined in the literature as the distance at which air is advectively drawn towards the extraction well at a rate that will effectively remove contaminants from the soil. Limitations of vacuum response measurements included monitoring points where screens were submerged in water, inaccessible due to surface conditions (i.e. ice), or borehole smearing causing limited permeability. These limitations were evaluated to determine the effective ROI. The steady-state vacuum response measurements at the monitoring probes under the various test conditions are listed in Tables 3-1 to 3-6.

Vacuum response (greater than or equal to (> =) 0.1 inch W.C.) was detected at multiple monitoring probe locations (both inside and outside the HCC) during tests at both HMW-46A and HSVE-20. Barometric pressure did not appear to make a difference in the vacuum response measured. The horizontal ROI (> = 0.1 inch W.C.) measured during the tests appears to be approximately 200 to 300 feet. The vertical extent of vacuum influence is difficult to estimate given that a vast majority of the monitoring points were screened in shallow soils 6 to 20 feet bsg; but, it appears that based on data from HMW-46B, the vertical extent likely extends to 25 to 28 feet bsg. Deeper sand deposits (greater than 30 feet bsg) showed no vacuum influence, and were under pressure, which may indicate a layer of very cohesive and low permeability soils between approximately 28 feet bsg and the sand. It appears that the maximum flow rate the shallows soils will produce is approximately 45 to 50 scfm. A graphic illustration of ROI readings at HMW-46A and HSVE-20 are provided in Figures 3-1 and 3-2.

$R_r = C_v \times Q_s$ (where C_v is the known concentration of hydrocarbon, and Q_s is the measured influent air stream flow rate.

To calculate the removal rate (R_r) in lbs/hr, the concentration was converted to lbs/L and the flow rate converted to L/hr. The conversions were as follows:

$C_v(lbs/L) = C_v(mg/L) \times kg/1{,}000{,}000mg \times 2.205lbs/kg$

And

$Q_s(L/day) = Q_s(ft^3/min) \times 60\ min/hr \times 24hr/day \times 28.317\ L/ft^3$

Using the above-referenced calculations and the influent air stream summa canister laboratory analytical results, the TPH-gasoline removal rate in lbs/day is as follows:

HMW-46A

R_r (at 43 inches W.C. and 30 scfm) = 323 lbs TPH-gasoline/day

R_r (at 76 inches W.C. and 35 scfm) = 429 lbs TPH-gasoline/day

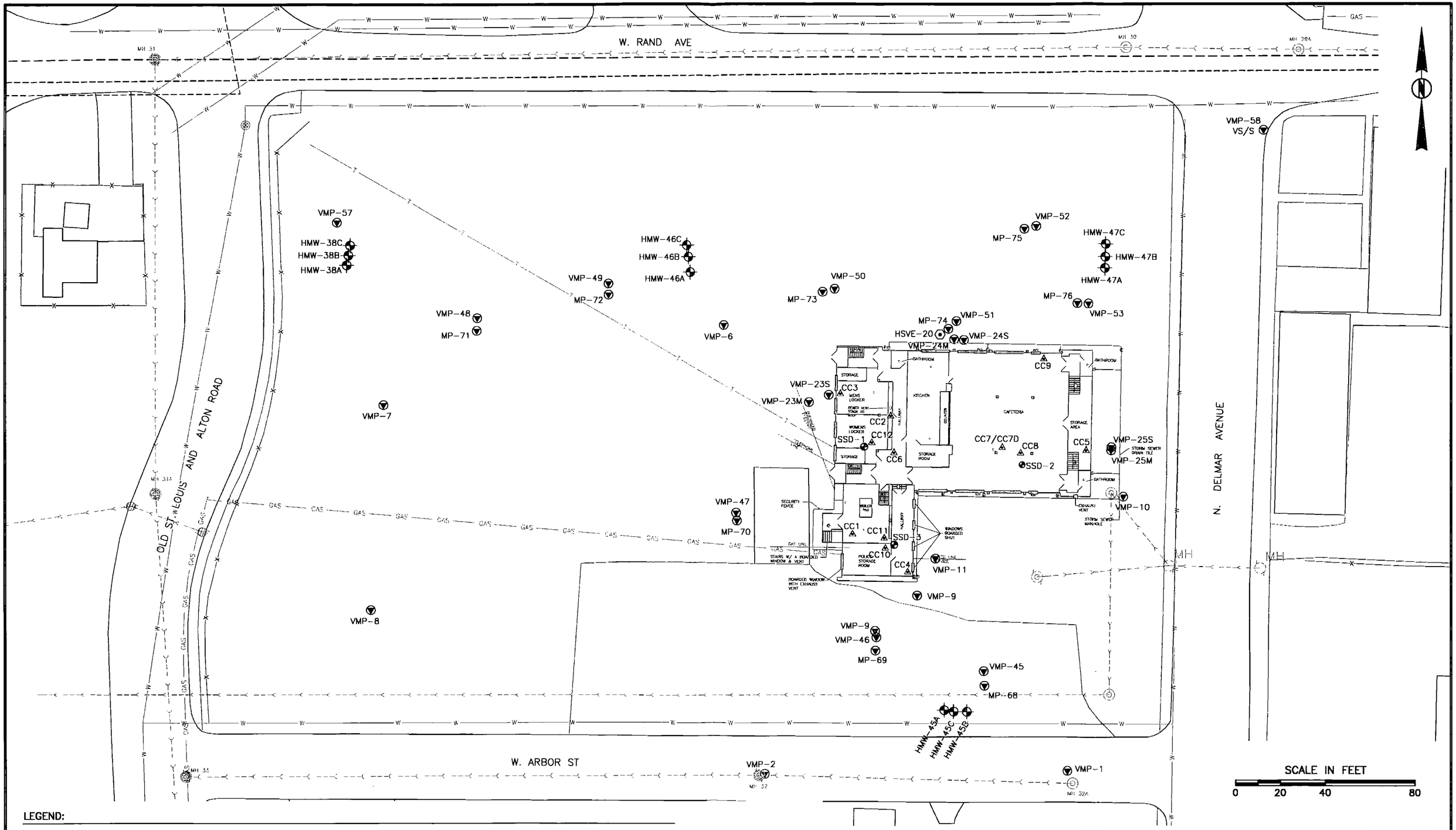
R_r (at 100 inches W.C. and 50 scfm) = 450 lbs TPH-gasoline/day

HSVE-20

R_r (at 100 inches W.C. and 50 scfm) = 58 lbs TPH-gasoline/day

Hand calculations of TPH-gasoline removal rates in lbs/day are included in Appendix E.

FIGURES



LEGEND:

- VAPOR MONITORING POINTS (MP, VP, VMP)
- CLAYTON MONITORING WELL (HMW)
- CLAYTON SOIL VAPOR EXTRACTION WELL (HSVE)
- CC1 SUB-SLAB VAPOR MONITORING POINTS
- SUB-SLAB PILOT TEST VAPOR EXTRACTION POINT
- COLUMNS
- AIR CONDITIONER
- CLEAN OUT
- DOWN SPOUT
- SANITARY SEWER CLEAN OUT
- FLOOR DRAIN
- WINDOW

CHECK BY	
DRAWN BY	BCP
DATE	3-18-05
SCALE	AS SHOWN
CAD NO.	0309513002m5
PRJ NO.	15-03095.13

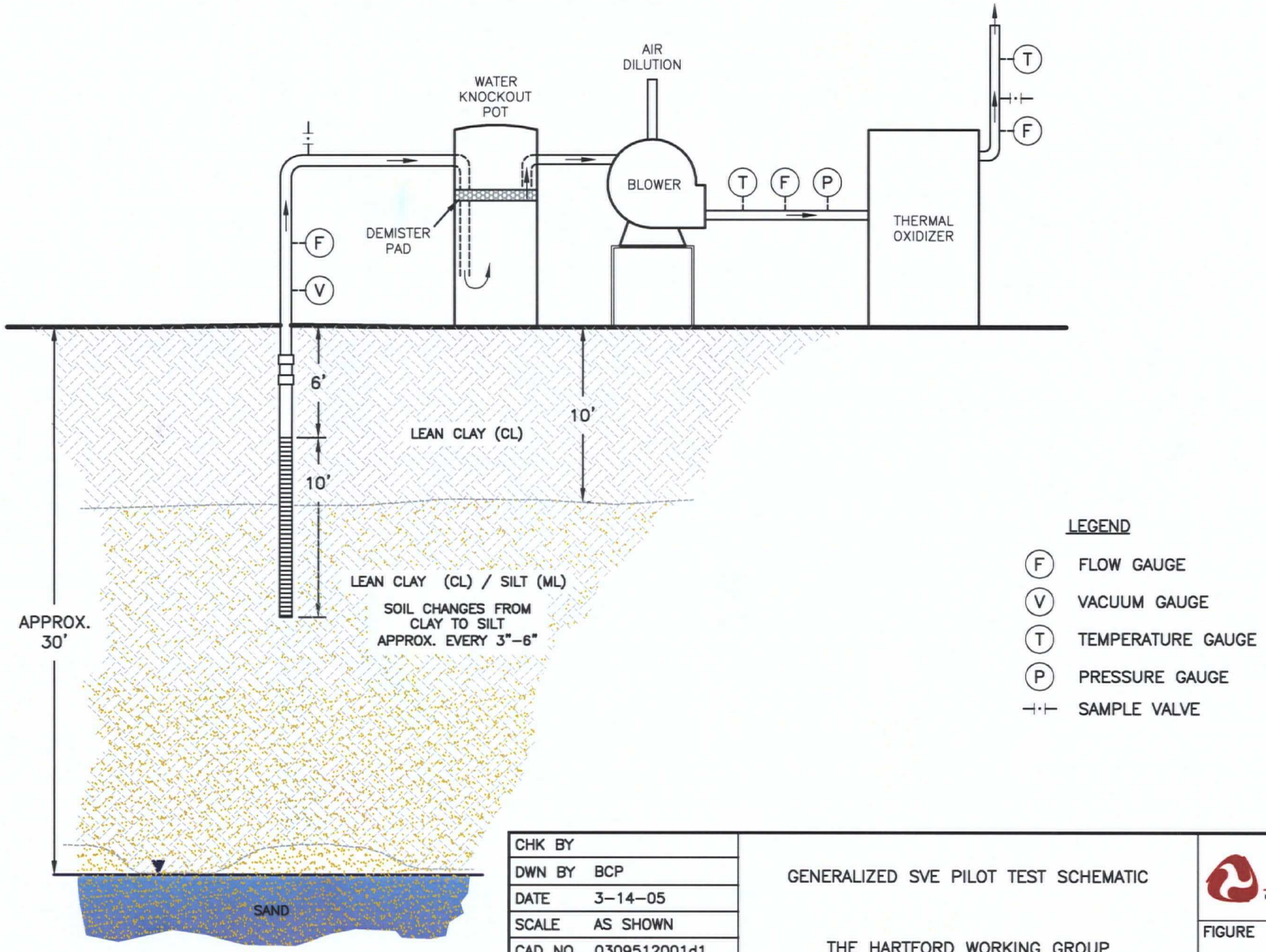
SVE PILOT TEST

HARTFORD COMMUNITY CENTER
THE HARTFORD WORKING GROUP
HARTFORD, ILLINOIS

Clayton GROUP SERVICES

FIGURE
2-1

GENERALIZED SOIL VAPOR EXTRACTION PILOT TEST SCHEMATIC



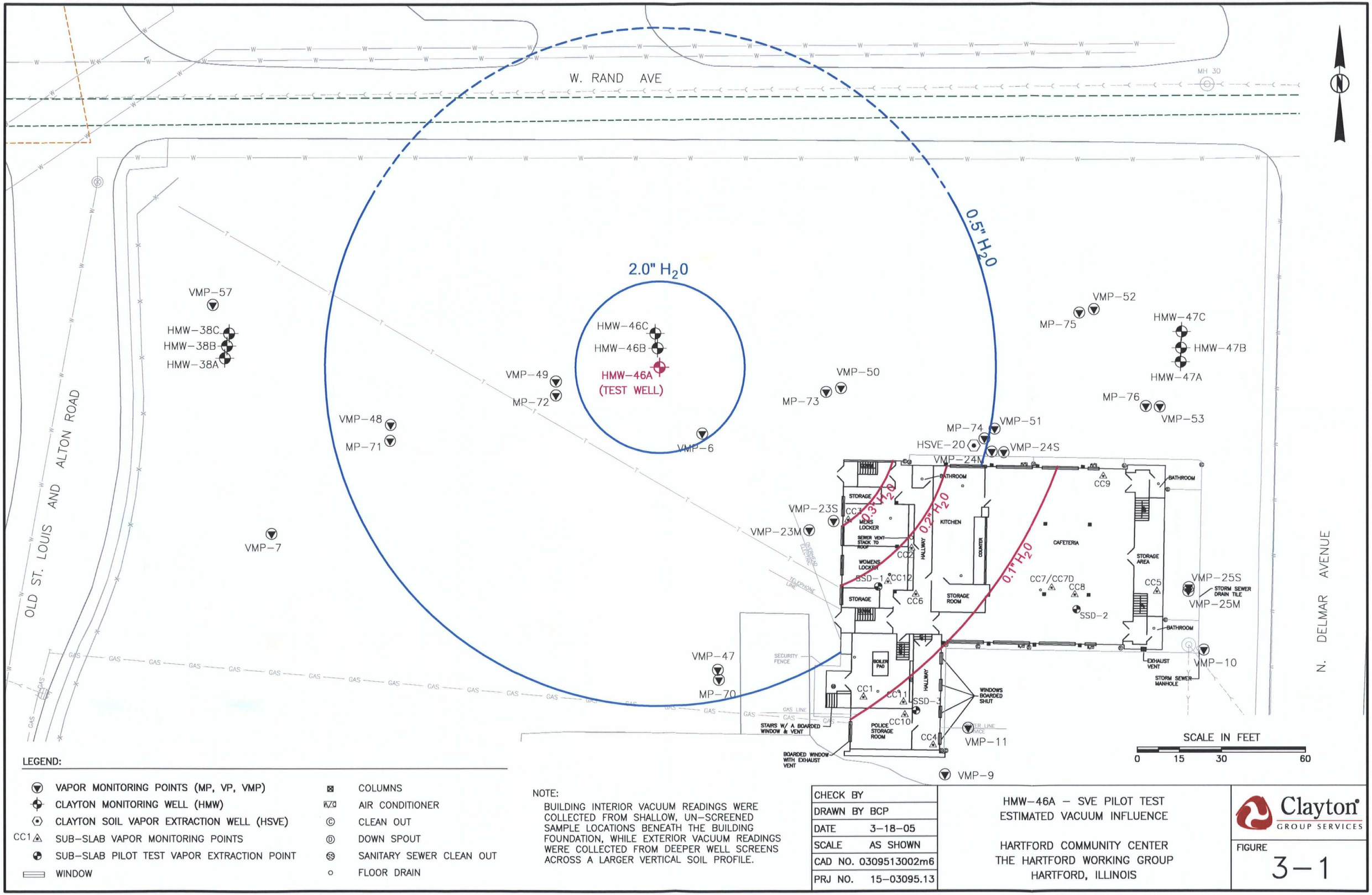
CHK BY	
DWN BY	BCP
DATE	3–14–05
SCALE	AS SHOWN
CAD NO.	0309512001d1
PRJ NO.	15–03095.13

GENERALIZED SVE PILOT TEST SCHEMATIC

THE HARTFORD WORKING GROUP
HARTFORD, ILLINOIS

Clayton GROUP SERVICES

FIGURE
2–2



LEGEND:

- VAPOR MONITORING POINTS (MP, VP, VMP)
- CLAYTON MONITORING WELL (HMW)
- CLAYTON SOIL VAPOR EXTRACTION WELL (HSVE)
- CC1 SUB-SLAB VAPOR MONITORING POINTS
- SUB-SLAB PILOT TEST VAPOR EXTRACTION POINT
- WINDOW
- COLUMNS
- AIR CONDITIONER
- CLEAN OUT
- DOWN SPOUT
- SANITARY SEWER CLEAN OUT
- FLOOR DRAIN

NOTE:

BUILDING INTERIOR VACUUM READINGS WERE COLLECTED FROM SHALLOW, UN-SCREENED SAMPLE LOCATIONS BENEATH THE BUILDING FOUNDATION, WHILE EXTERIOR VACUUM READINGS WERE COLLECTED FROM DEEPER WELL SCREENS ACROSS A LARGER VERTICAL SOIL PROFILE.

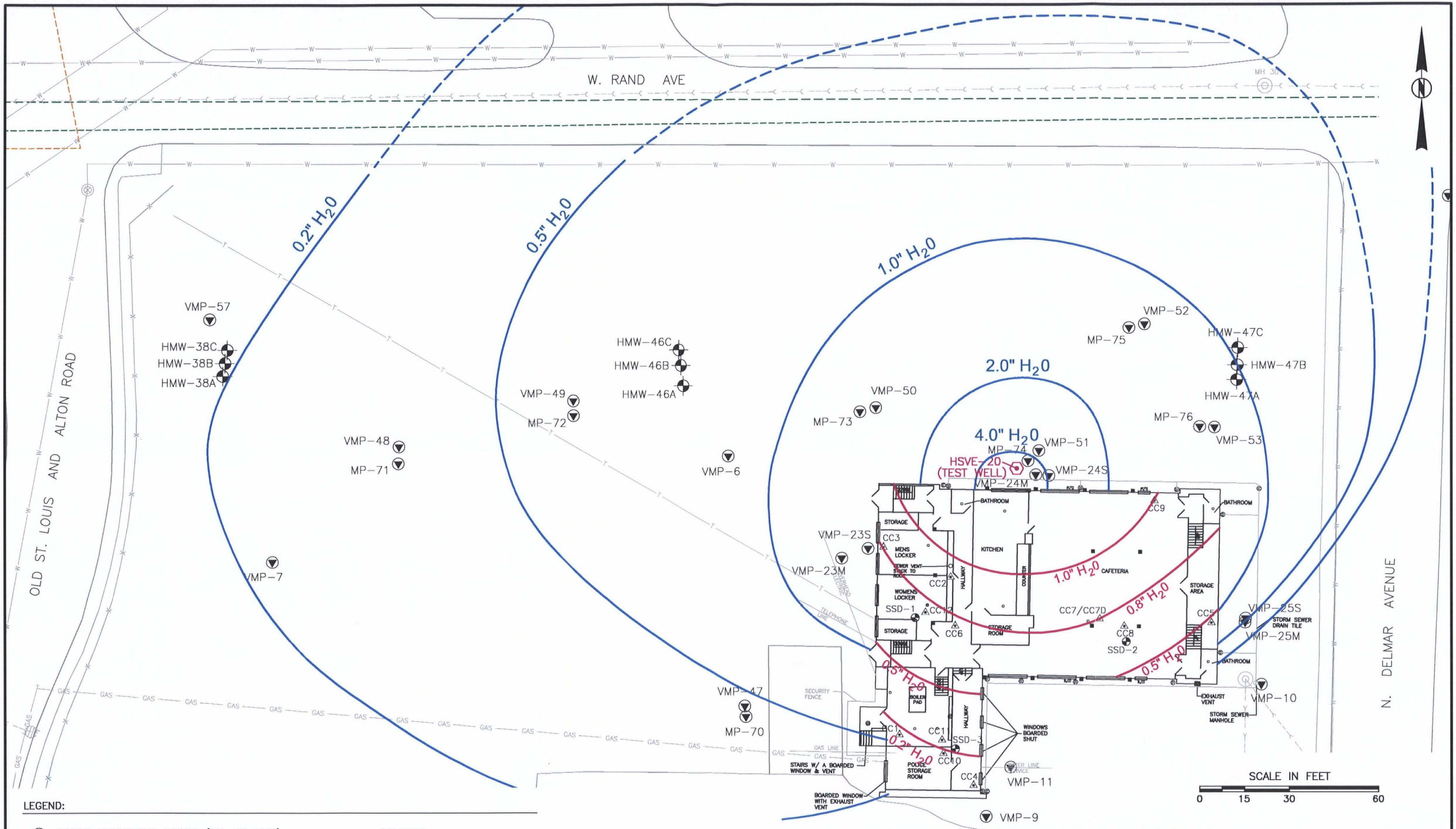
CHECK BY	
DRAWN BY	BCP
DATE	3-18-05
SCALE	AS SHOWN
CAD NO.	0309513002m6
PRJ NO.	15-03095.13

HMW-46A - SVE PILOT TEST
ESTIMATED VACUUM INFLUENCE

HARTFORD COMMUNITY CENTER
THE HARTFORD WORKING GROUP
HARTFORD, ILLINOIS

Clayton GROUP SERVICES

FIGURE
3-1



LEGEND:

- VAPOR MONITORING POINTS (MP, VP, VMP)
- CLAYTON MONITORING WELL (HMW)
- CLAYTON SOIL VAPOR EXTRACTION WELL (HSVE)
- CC1 SUB-SLAB VAPOR MONITORING POINTS
- SUB-SLAB PILOT TEST VAPOR EXTRACTION POINT
- WINDOW
- COLUMNS
- AIR CONDITIONER
- CLEAN OUT
- DOWN SPOUT
- SANITARY SEWER CLEAN OUT
- FLOOR DRAIN

NOTE:

BUILDING INTERIOR VACUUM READINGS WERE COLLECTED FROM SHALLOW, UN-SCREENED SAMPLE LOCATIONS BENEATH THE BUILDING FOUNDATION, WHILE EXTERIOR VACUUM READINGS WERE COLLECTED FROM DEEPER WELL SCREENS ACROSS A LARGER VERTICAL SOIL PROFILE.

CHECK BY	
DRAWN BY	BCP
DATE	3-18-05
SCALE	AS SHOWN
CAD NO.	0309513002m7
PRJ NO.	15-03095.13

HSVE 20 – SVE PILOT TEST
ESTIMATED VACUUM INFLUENCE

HARTFORD COMMUNITY CENTER
THE HARTFORD WORKING GROUP
HARTFORD, ILLINOIS

Clayton GROUP SERVICES

FIGURE
3-2

Figure 3-3
Monitoring Points - Vacuum Readings (in. H20)/Barometric Pressure (mmHg)
Pilot Test Well HMW-46A
February 2-3, 2005

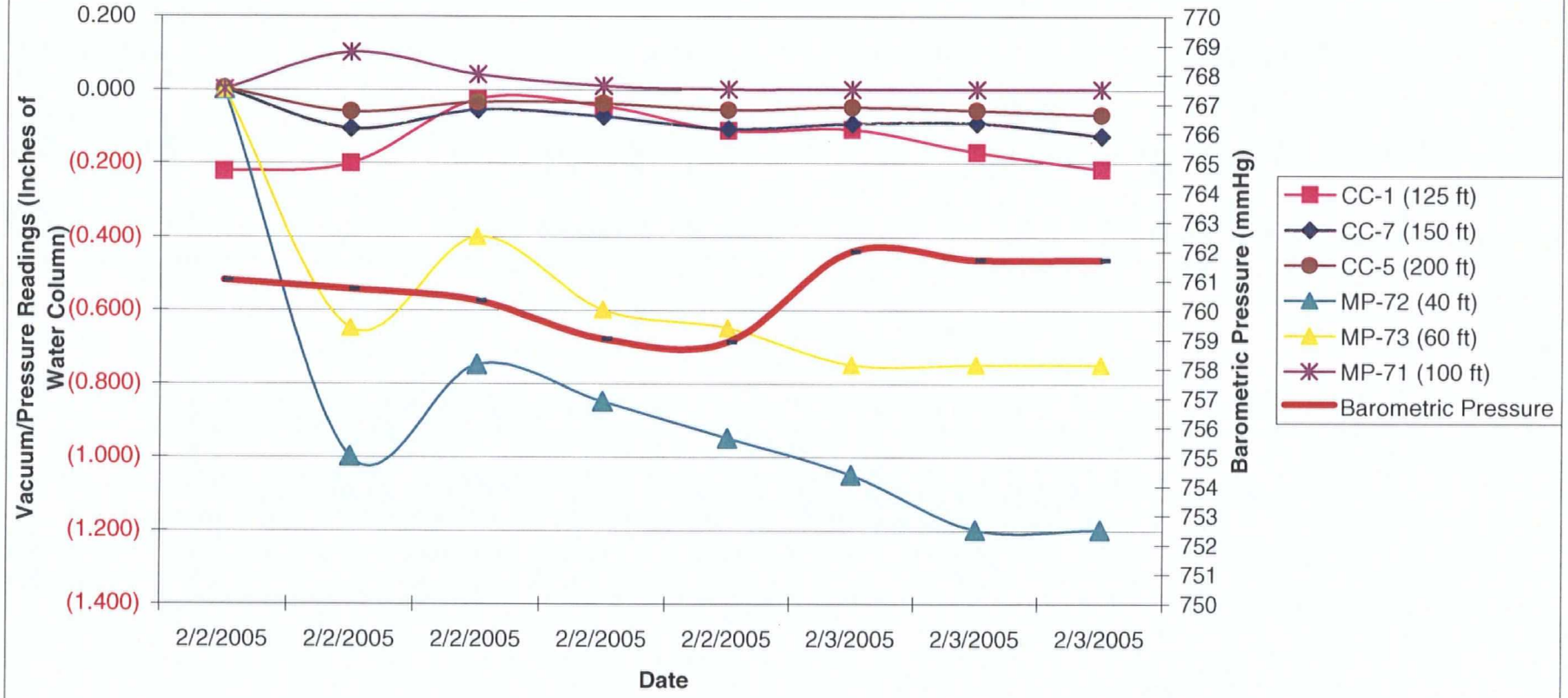


Figure 3-4
Monitoring Points - Vacuum Readings(in. water)/Barometric Pressure (mmHg)
Pilot Test Well HMW-46A
February 7-9 2005

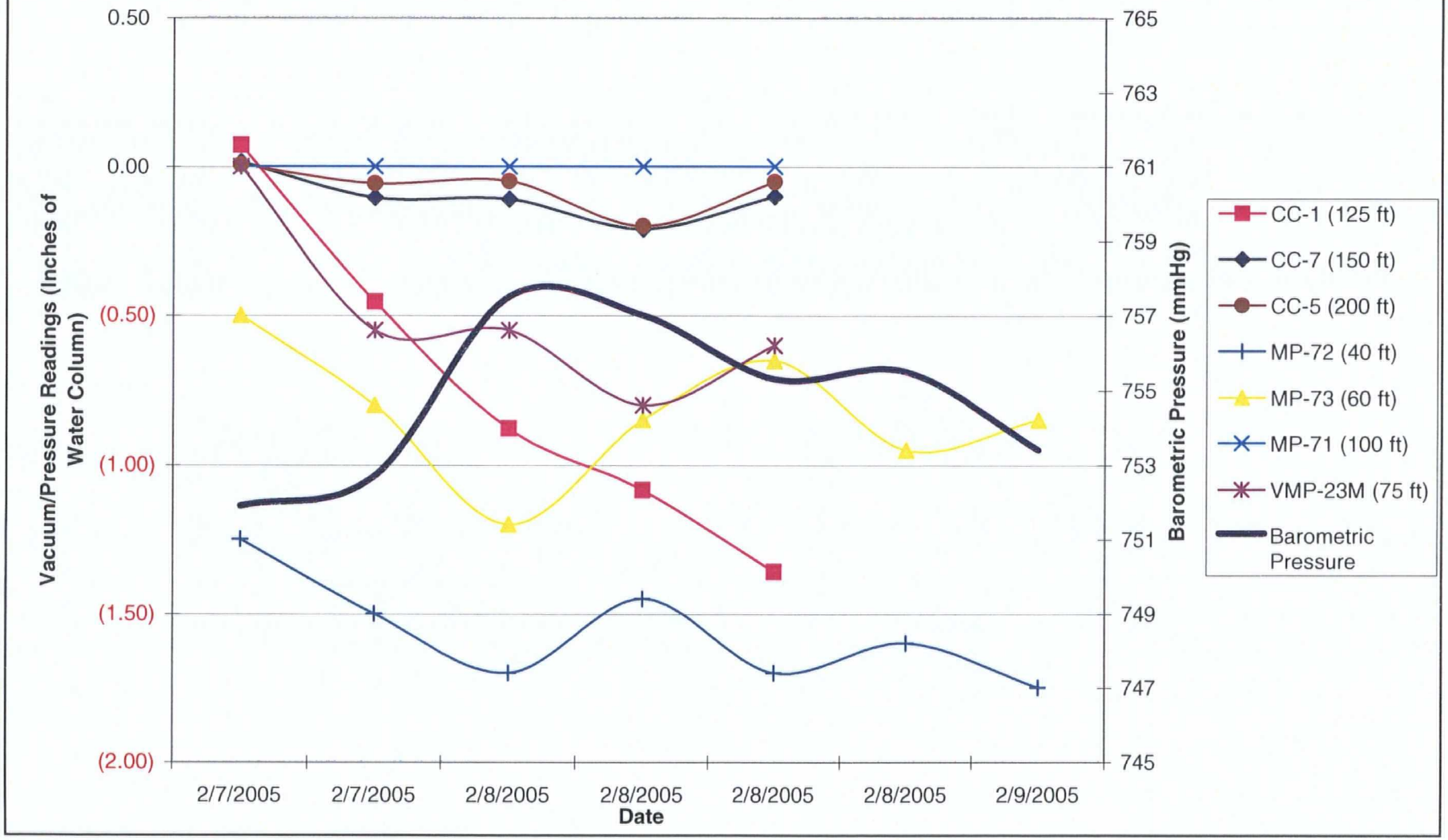


Figure 3-5
Interior Monitoring Points - Vacuum Readings (Inches of Water)/Barometric Pressure (mmHg)
Pilot Test Well HSVE-20
February 9-10, 2005

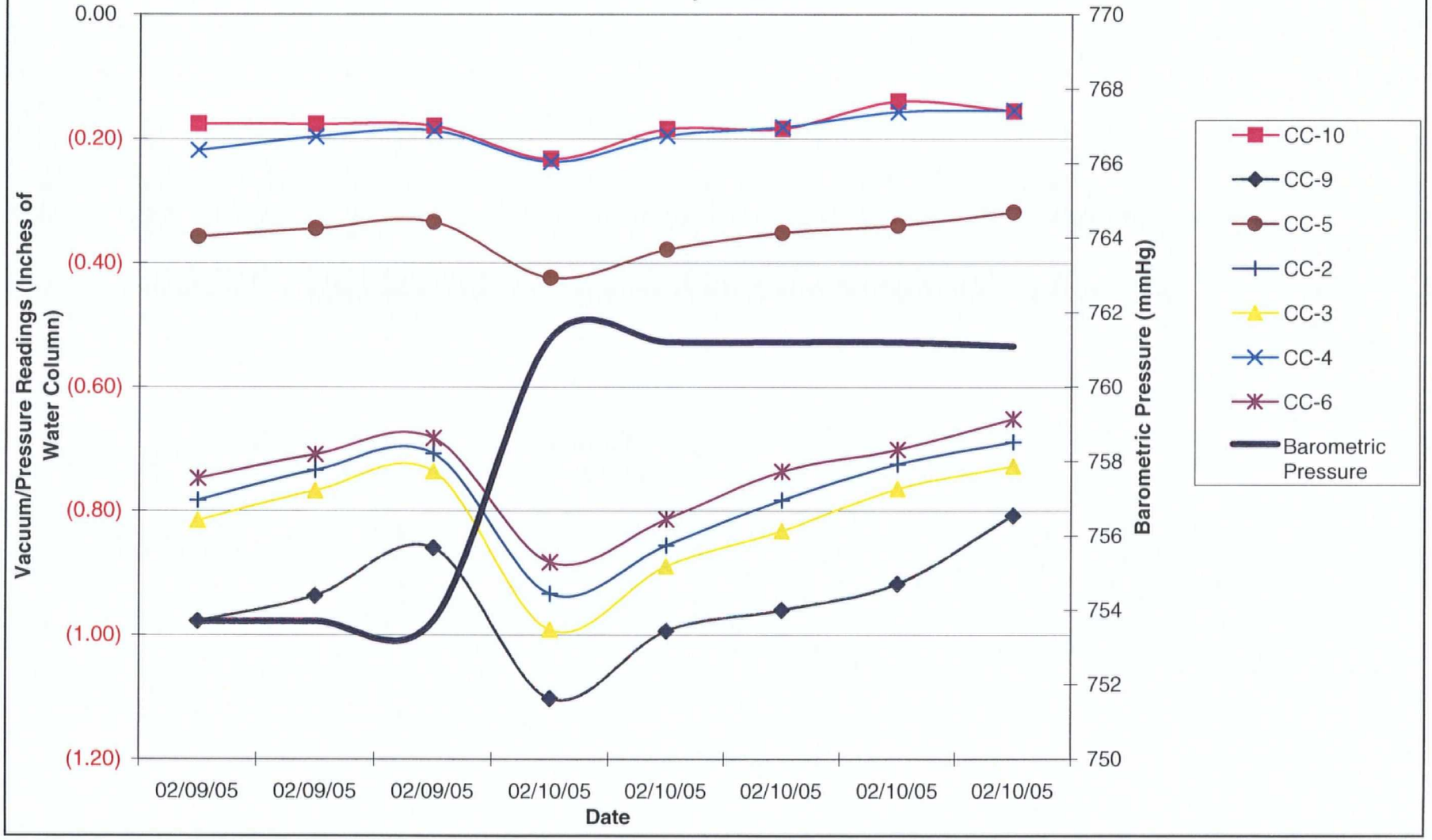
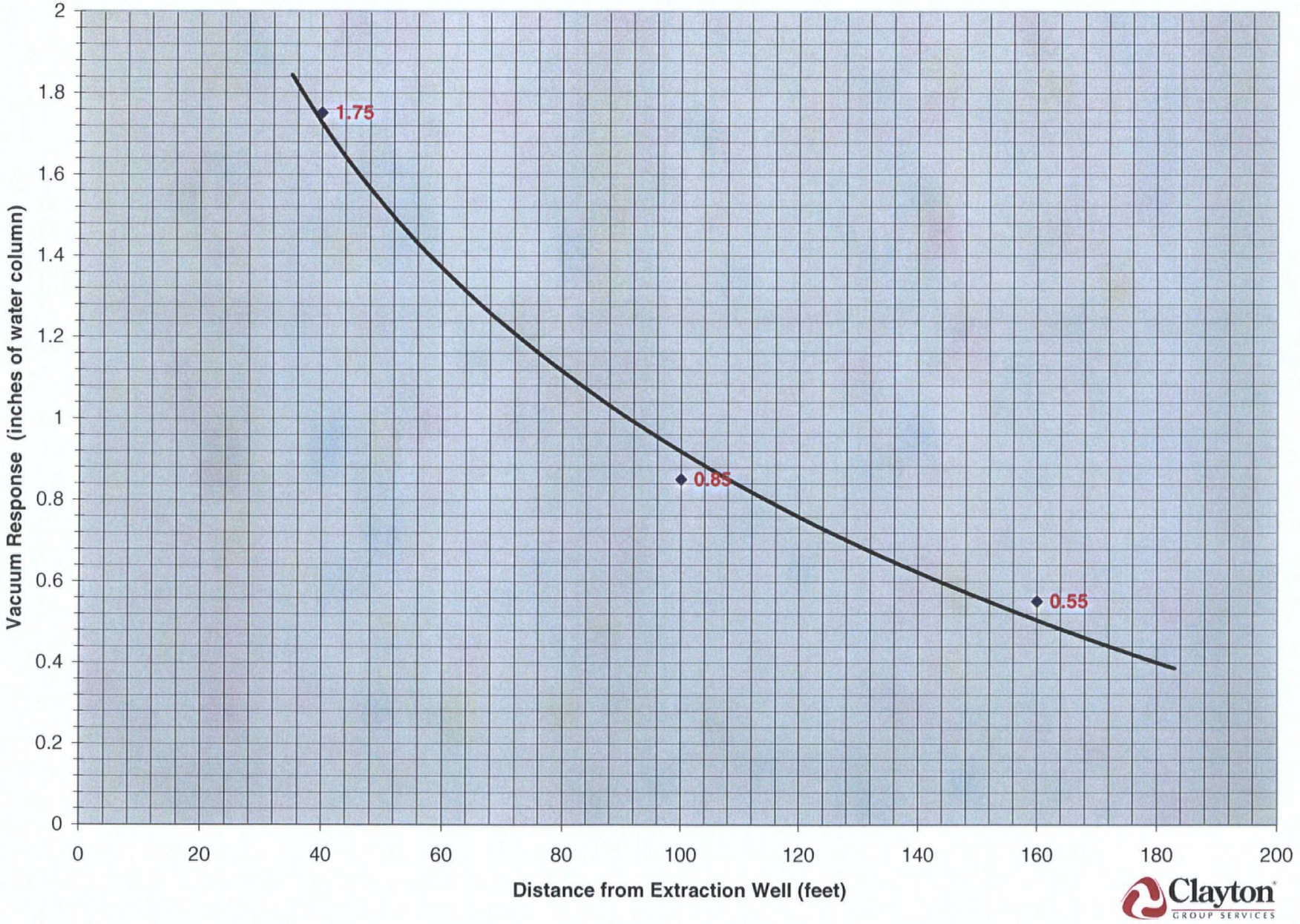


Figure 3-6

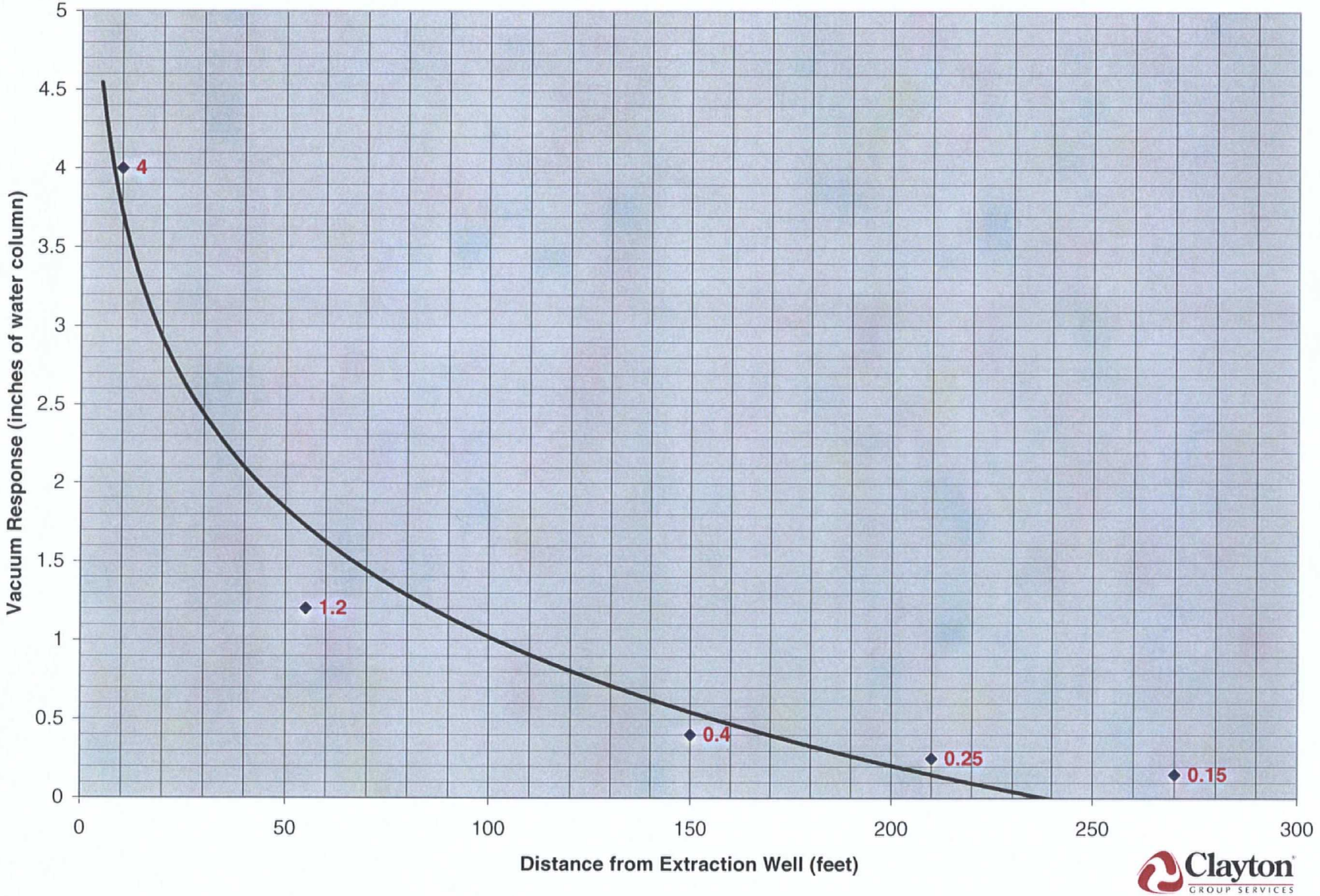
SVE Pilot Test - HMW-46A
February 7-9, 2005



Clayton GROUP SERVICES

Figure 3-7

SVE Pilot Test - HSVE-20



Clayton GROUP SERVICES

TABLES

TABLE 3-1

HMW-46A/HMW-47A/MP-76 Pilot Test (Step Test)
Subsurface Pressure/Vacuum Readings (inches water) - Interior Monitoring Points
Hartford Community Center SVE Pilot Test
February 1-5, 2005

DATE	TIME	TEST WELL	WELL HEAD FLOW (SCFM)	WELL HEAD VACUUM (IN. WATER COLUMN)	Interior Monitoring Point Location												
					CC-1	CC-2	CC-3	CC-4	CC-5	CC-6	CC-7	CC-7D	CC-8	CC-9	CC-10	CC-11	CC-12
02/01/05	8:10	HMW-46A	0	0	0.000	(0.030)	(0.015)	(0.010)	0.010	(0.030)	(0.020)	(0.030)	(0.020)	0.100	(0.010)	(0.030)	(0.020)
02/01/05	13:20	HMW-46A	35	46	0.000	(0.055)	(0.030)	0.000	0.000	(0.060)	(0.045)	(0.045)	(0.050)	0.000	0.000	0.000	0.000
02/01/05	14:15	HMW-46A	35	46	0.000	(0.055)	(0.090)	(0.020)	(0.030)	(0.065)	(0.050)	(0.050)	(0.045)	0.000	(0.015)	(0.025)	(0.060)
02/01/05	14:45	HMW-46A	35	48	0.000	(0.055)	(0.085)	(0.030)	(0.035)	(0.060)	(0.065)	(0.065)	(0.065)	(0.005)	(0.030)	(0.035)	(0.060)
02/01/05	15:25	HMW-46A	35	73	(0.180)	(0.081)	(0.125)	(0.026)	(0.057)	(0.103)	(0.088)	(0.102)	(0.088)	(0.117)	(0.021)	(0.050)	(0.101)
02/01/05	16:30	HMW-46A	35	73	(0.173)	(0.074)	(0.124)	(0.033)	(0.044)	(0.082)	(0.098)	(0.102)	(0.096)	(0.102)	(0.036)	(0.055)	(0.089)
02/01/05	17:05	HMW-46A	35	73	(0.202)	(0.075)	(0.120)	(0.033)	(0.037)	(0.076)	(0.066)	(0.063)	(0.070)	(0.054)	(0.031)	(0.038)	(0.087)
02/01/05	17:40	HMW-46A	50	100	(0.212)	(0.082)	(0.136)	(0.051)	(0.034)	(0.074)	(0.060)	(0.063)	(0.062)	(0.049)	(0.045)	(0.060)	(0.089)
02/01/05	18:20	HMW-46A	50	100	(0.214)	(0.132)	(0.214)	(0.052)	(0.125)	(0.149)	(0.135)	(0.137)	(0.137)	(0.125)	(0.056)	(0.069)	(0.160)
02/02/05	10:40	HMW-46A	0	0	(0.224)	0.017	0.025	0.009	0.003	0.017	0.001	0.003	0.002	(0.003)	0.020	0.018	0.018
02/02/05	11:45	HMW-46A	45	100	(0.202)	(0.115)	(0.193)	(0.037)	(0.061)	(0.116)	(0.107)	(0.103)	(0.102)	(0.066)	(0.033)	(0.057)	(0.134)
02/02/05	13:00	HMW-46A	45	100	(0.027)	(0.065)	(0.122)	(0.022)	(0.034)	(0.067)	(0.056)	(0.054)	(0.056)	(0.035)	(0.013)	(0.024)	(0.079)
02/02/05	15:00	HMW-46A	45	100	(0.046)	(0.087)	(0.151)	(0.036)	(0.038)	(0.088)	(0.074)	(0.073)	(0.071)	(0.083)	(0.036)	(0.053)	(0.100)
02/02/05	17:00	HMW-46A	45	100	(0.113)	(0.118)	(0.185)	(0.051)	(0.056)	(0.121)	(0.108)	(0.109)	(0.106)	(0.105)	(0.054)	(0.065)	(0.139)
02/03/05	11:00	HMW-46A	NR	100	(0.109)	(0.100)	(0.180)	(0.034)	(0.048)	(0.109)	(0.093)	(0.090)	(0.089)	(0.093)	(0.032)	(0.043)	(0.127)
02/03/05	12:55	HMW-46A	NR	100	(0.172)	(0.111)	(0.194)	(0.046)	(0.057)	(0.111)	(0.092)	(0.090)	(0.091)	(0.086)	(0.045)	(0.052)	(0.125)
02/03/05	14:45	HMW-46A	NR	100	(0.218)	(0.146)	(0.238)	(0.063)	(0.070)	(0.148)	(0.128)	(0.131)	(0.127)	(0.138)	(0.076)	(0.092)	(0.161)
02/03/05	16:10	HMW-47A	0	100	(0.133)	(0.010)	(0.006)	(0.004)	0.000	(0.006)	0.002	0.006	0.000	(0.025)	(0.004)	(0.002)	(0.010)
02/03/05	17:40	HMW-47A	0	100	(0.125)	(0.037)	(0.032)	(0.014)	(0.025)	(0.036)	(0.044)	(0.045)	(0.046)	(0.072)	(0.012)	(0.016)	(0.035)
02/04/05	7:30	MP-76	40	98	(0.150)	(0.002)	(0.004)	(0.009)	0.002	(0.005)	(0.019)	(0.020)	(0.019)	0.002	(0.010)	(0.014)	(0.007)
02/04/05	8:30	MP-76	40	98	0.070	(0.039)	(0.028)	(0.012)	(0.028)	(0.027)	(0.057)	(0.056)	(0.054)	(0.085)	(0.003)	(0.008)	NR
02/05/05	14:36	N/A	0	0	NR	0.018	0.029	NR	0.009	0.006	0.050	0.050	0.043	0.255	NR	NR	NR

Note: Negative pressure (vacuum) readings in **red** and parantheses
NR = No Reading

TABLE 3-2
HMW-46A Pilot Test
Subsurface Pressure/Vacuum Readings (inches water) - Interior Monitoring Points
Hartford Community Center SVE Pilot Test
February 7-8, 2005

DATE	TIME	TEST WELL	WELL HEAD FLOW (SCFM)	WELL HEAD VACUUM (IN. WATER COLUMN)	Interior Monitoring Point Location												
					CC-1	CC-2	CC-3	CC-4	CC-5	CC-6	CC-7	CC-7D	CC-8	CC-9	CC-10	CC-11	CC-12
02/07/05	14:15	HMW-46A	0	0	0.07	0.02	0.03	0.01	0.01	0.02	0.02	0.02	0.01	(0.07)	0.02	0.01	0.02
02/07/05	16:00	HMW-46A	43	100	(0.45)	(0.13)	(0.21)	(0.05)	(0.06)	(0.13)	(0.10)	(0.11)	(0.10)	(0.13)	(0.06)	(0.06)	(0.15)
02/07/05	20:00	HMW-46A	43	100	(0.88)	(0.19)	(0.30)	(0.11)	(0.05)	(0.13)	(0.11)	(0.10)	(0.09)	(0.13)	(0.17)	(0.18)	(0.19)
02/08/05	8:00	HMW-46A	43	100	(1.08)	(0.20)	(0.31)	(0.08)	(0.20)	(0.22)	(0.21)	(0.22)	(0.21)	(0.10)	(0.11)	(0.12)	(0.24)
02/08/05	12:15	HMW-46A	43	100	(1.36)	(0.11)	(0.21)	(0.03)	(0.05)	(0.12)	(0.10)	(0.10)	(0.10)	(0.10)	(0.02)	(0.03)	(0.14)

Note: Negative pressure (vacuum) readings in **red** and parantheses
NR = No Reading

TABLE 3-3

HSVE-20 Pilot Test

Subsurface Pressure/Vacuum Readings (inches water) - Interior Monitoring Points

Hartford Community Center SVE Pilot Test

February 9-10, 2005

DATE	TIME	TEST WELL	WELL HEAD FLOW (SCFM)	WELL HEAD VACUUM (IN. WATER COLUMN)	Interior Monitoring Point Location												
					CC-1	CC-2	CC-3	CC-4	CC-5	CC-6	CC-7	CC-7D	CC-8	CC-9	CC-10	CC-11	CC-12
02/09/05	12:15	HSVE-20	50	100	(2.11)	(0.78)	(0.82)	(0.22)	(0.36)	(0.75)	(0.73)	(0.76)	(0.72)	(0.98)	(0.18)	(0.28)	(0.72)
02/09/05	14:40	HSVE-20	50	100	(2.23)	(0.74)	(0.77)	(0.20)	(0.35)	(0.71)	(0.70)	(0.73)	(0.70)	(0.94)	(0.18)	(0.26)	(0.70)
02/09/05	17:15	HSVE-20	50	100	(2.15)	(0.71)	(0.74)	(0.19)	(0.34)	(0.68)	(0.69)	(0.70)	(0.67)	(0.86)	(0.18)	(0.26)	(0.68)
02/10/05	10:00	HSVE-20	50	100	(0.36)	(0.93)	(0.99)	(0.24)	(0.42)	(0.88)	(0.89)	(0.92)	(0.87)	(1.10)	(0.23)	(0.35)	(0.88)
02/10/05	12:00	HSVE-20	50	100	(0.26)	(0.86)	(0.89)	(0.20)	(0.38)	(0.81)	(0.79)	(0.83)	(0.78)	(0.99)	(0.19)	(0.30)	(0.79)
02/10/05	14:15	HSVE-20	50	100	(0.31)	(0.78)	(0.83)	(0.18)	(0.35)	(0.74)	(0.74)	(0.77)	(0.72)	(0.96)	(0.18)	(0.28)	(0.73)
02/10/05	16:10	HSVE-20	50	100	(0.23)	(0.73)	(0.77)	(0.16)	(0.34)	(0.70)	(0.71)	(0.75)	(0.70)	(0.92)	(0.14)	(0.23)	(0.69)
02/10/05	17:45	HSVE-20	50	100	(0.24)	(0.69)	(0.73)	(0.16)	(0.32)	(0.65)	(0.66)	(0.68)	(0.65)	(0.81)	(0.16)	(0.24)	(0.65)

Note: Negative pressure (vacuum) readings in **red** and parantheses
NR = No Reading

TABLE 3-4

HMW-46A/HMW-47A/MP-76 Pilot Test (Step Test)

February 1 - 4, 2005

Subsurface Pressure/Vacuum Readings (inches water) - Exterior Wells and Monitoring Points

Hartford Community Center SVE Pilot Test

DATE	TIME	TEST WELL	WELL HEAD FLOW (SCFM)	WELL HEAD VACUUM (IN. WATER COLUMN)	Exterior Monitoring Point Location															
					HMW-46B	HMW-46C	MP-72	MP-71	MP-73	HMW-45A	HMW-45B	HMW-45C	MP-68	MP-69	MP-74	VMP-22D	HMW-47B	HMW-47C	HMW-47A	MP-76	MP-75
02/01/05	7:50	HMW-46A	0	0	1.65	0.00	0.00	0.00	0.00	0.00	(0.05)	0.75	0.00	0.00	0.00	0.35	NR	NR	NR	NR	NR
02/01/05	13:30	HMW-46A	30	46	(0.35)	NR	(0.55)	0.00	(0.30)	NR	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	NR
02/01/05	14:25	HMW-46A	30	46	(0.35)	3.50	(0.55)	0.00	(0.30)	NR	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	NR
02/01/05	15:25	HMW-46A	35	73	(0.50)	2.00	(0.70)	0.00	(0.50)	NR	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	NR
02/01/05	16:30	HMW-46A	35	73	(0.50)	2.00	(0.70)	0.00	(0.50)	NR	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	NR
02/01/05	17:40	HMW-46A	50	100	(0.80)	2.00	(1.00)	0.00	(0.70)	NR	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	NR
02/02/05	10:30	HMW-46A	0	0	0.00	0.00	0.00	0.00	0.00	NR	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	NR
02/02/05	11:35	HMW-46A	45	100	(1.20)	2.00	(1.00)	0.10	(0.65)	NR	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	NR
02/02/05	13:32	HMW-46A	45	100	(0.80)	2.00	(0.75)	0.04	(0.40)	NR	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	NR
02/02/05	15:05	HMW-46A	45	100	(0.90)	2.00	(0.85)	0.01	(0.60)	NR	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	NR
02/02/05	17:10	HMW-46A	45	100	(1.10)	2.00	(0.95)	0.00	(0.65)	NR	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	NR
02/03/05	11:30	HMW-46A	NR	100	(1.20)	1.20	(1.05)	0.00	(0.75)	NR	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	NR
02/03/05	12:50	HMW-46A	NR	100	(1.50)	2.00	(1.20)	0.00	(0.75)	NR	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	NR
02/03/05	14:16	HMW-46A	NR	100	(1.45)	1.85	(1.20)	0.00	(0.75)	NR	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	NR
02/03/05	16:15	HMW-47A	0	0	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	0.00	NR	0.00	0.00	NR	0.00	0.00
02/03/05	16:45	HMW-47A	0	100	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	0.00	NR	0.00	0.00	NR	0.00	0.00
02/04/05	8:00	MP-76	40	98	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	(0.45)	NR	NR	NR	(0.60)	NR	(0.20)
02/04/05	10:00	MP-76	40	98	NR	NR	NR	NR	0.00	NR	NR	NR	NR	NR	0.00	NR	0.00	0.00	(0.80)	NR	(0.42)

Note: Negative pressure (vacuum) readings in **red** and parantheses
NR = No Reading

TABLE 3-5
HMW-46A SVE Pilot Test
Radius of Influence Results (exterior wells and monitoring points)
February 7 - 9, 2005
Hartford Community Center SVE Pilot Test
The Hartford Working Group / Hartford, Illinois

WELL	DATE								
	2/7/2005	2/7/2005	2/7/2005	2/7/2005	2/8/2005	2/8/2005	2/8/2005	2/8/2005	2/9/2005
	TIME								
	13:00	15:00	16:00	22:00	7:00	12:00	17:00	21:00	8:30
HMW-45A	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
HMW-45B	0.10		0.00	0.00	0.00	0.00	0.00	0.00	0.00
HMW-45C	4.00		4.00	4.00	4.00	4.00	4.00	4.00	4.00
HMW-46B	0.00		(0.50)	(1.90)	(2.50)	(1.65)	(1.75)	(2.00)	(1.75)
HMW-46C	4.00		4.00	2.00	3.00	3.00	3.00	3.00	3.00
HMW-47A	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
HMW-47B	0.20		0.20	0.00	0.00	0.00	0.00	0.00	0.00
HMW-47C	0.10		0.00	0.00	0.00	0.00	0.00	0.00	0.00
MP-72	0.00		(1.25)	(1.50)	(1.70)	(1.45)	(1.70)	(1.60)	(1.75)
VMP-49S	0.00		(1.25)	(1.60)	(1.75)	(1.50)	(1.75)	(1.65)	(1.75)
VMP-49VS	0.00		(1.25)	(1.50)	(1.60)	(1.50)	(0.60)	(1.65)	(1.90)
MP-71	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-50S	0.00		(0.80)	(1.10)	(1.25)	(0.90)	(1.00)	(0.60)	(1.25)
VMP-50VS	0.00		0.00	0.00	0.00	0.00	0.00	0.00	(0.85)
MP-74	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-51S	0.00		0.00	(0.50)	(0.50)	(0.30)	(0.35)	(0.45)	(0.45)
VMP-51VS	0.00		0.00	0.00	(0.50)	(0.30)	(0.35)	(0.45)	(0.45)
VMP-24S	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-24M	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
MP-75	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-52S	0.00		(0.20)	(0.45)	(0.45)	(0.15)	(0.05)	(0.40)	(0.35)
VMP-52VS	0.00		(1.00)	(1.00)	(0.30)	0.00	0.00	0.00	0.00
MP-76	0.18		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-53VS	0.17		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-53S	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-25S	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-25M	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-10	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
MP-68	0.05		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP45S	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-45VS	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-9S	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-9M	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-9D	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-11	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
MP-69	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-46S	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-46VS	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
MP-70	NR		NR	NR	NR	NR	NR	NR	NR
VMP-47S	0.00		(0.09)	(0.25)	(0.10)	(0.15)	(0.25)	(0.35)	(0.35)
VMP-47VS	0.00		0.00	0.00	0.00	(0.20)	(0.25)	(0.45)	(0.45)
VMP-7	0.00		(0.43)	(0.60)	(0.60)	(0.45)	(0.60)	(0.50)	(0.55)
VMP-8	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
HMW-38A	0.00		0.00	(0.55)	(0.55)	NR	NR	NR	(0.65)
HMW-38B	0.00		(0.50)	(1.15)	(0.65)	(0.50)	(0.70)	(0.55)	(0.55)
HMW-38C	NR		NR	NR	NR	NR	NR	NR	NR

TEST STARTED

TABLE 3-5
HMW-46A SVE Pilot Test
Radius of Influence Results (exterior wells and monitoring points)
February 7 - 9, 2005
Hartford Community Center SVE Pilot Test
The Hartford Working Group / Hartford, Illinois

WELL	DATE								
	2/7/2005	2/7/2005	2/7/2005	2/7/2005	2/8/2005	2/8/2005	2/8/2005	2/8/2005	2/9/2005
VMP-6S	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-6M	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP6D	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-23S	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.00
VMP-23M	0.00		(0.55)	(0.55)	(0.80)	(0.60)	(0.70)	(0.75)	(0.80)
VMP-48S	0.00		0.00	(0.95)	(0.95)	(0.75)	(0.75)	(0.75)	(0.85)
VMP-48VS	0.00		0.00	(1.00)	NR	(0.48)	(0.40)	(0.15)	(0.40)
MP-73	0.15		(0.50)	(0.80)	(1.20)	(0.85)	(0.65)	(0.95)	(0.85)

NOTES:
NR = Not recorded due to one or more factors (loose well caps, transducers, frozen conditions)
(X.XX) = Vacuum readings
X.XX = Pressure Readings
SVE system was down on 2/8/05 from 1000 to 1040 and on 2/9/05 from approximtley 0400 to 0800.

TABLE 3-6
HSVE-20 SVE Pilot Test
Radius of Influence Results (exterior wells and monitoring points)
February 9-10, 2005
Hartford Community Center SVE Pilot Test
The Hartford Working Group / Hartford, Illinois

WELL	DATE				
	2/9/2005	2/9/2005	2/10/2005	2/10/2005	2/10/2005
	TIME				
	14:30	17:00	11:00	14:00	16:40
HMW-45A	0.00	0.00	0.00	0.00	0.00
HMW-45B	0.00	0.00	0.00	0.00	0.00
HMW-45C	3.00	3.00	3.00	2.00	2.00
HMW-46A	(0.45)	(0.30)	(0.40)	(0.25)	(0.30)
HMW-46B	(0.35)	(0.45)	(0.55)	(0.25)	(0.30)
HMW-46C	3.00	3.00	1.90	1.90	2.00
HMW-47A	(0.90)	(0.85)	NR	NR	NR
HMW-47B	0.50	0.50	0.00	0.00	0.00
HMW-47C	0.00	0.00	0.00	NR	NR
MP-72	(0.35)	(0.35)	(0.40)	(0.25)	(0.30)
VMP-49S	(0.30)	(0.40)	0.00	(0.30)	(0.35)
VMP-49VS	(0.25)	(0.25)	(0.10)	0.00	0.00
MP-71	0.00	0.00	0.00	0.00	0.00
VMP-50S	(1.20)	(1.10)	(1.50)	(1.20)	(1.20)
VMP-50VS	0.00	0.00	0.00	0.00	0.00
MP-74	0.00	0.00	NR	NR	NR
VMP-51S	(4.00)	(4.00)	(4.00)	(4.00)	(4.00)
VMP-51VS	(4.00)	(4.00)	(4.00)	(4.00)	(4.00)
VMP-24S	0.00	0.00	0.00	0.00	0.00
VMP-24M	(4.10)	(4.00)	(4.00)	(4.80)	(4.70)
MP-75	(0.25)	(0.25)	0.00	NR	NR
VMP-52S	(1.50)	(1.50)	(1.25)	(1.25)	(1.25)
VMP-52VS	(0.30)	(0.70)	(2.00)	(1.50)	(1.45)
MP-76	(1.10)	(1.00)	(1.25)	(1.25)	(1.25)
VMP-53VS	(1.10)	(1.00)	(1.25)	(1.25)	(1.25)
VMP-53S	(1.10)	(1.00)	(1.25)	(1.25)	(1.25)
VMP-25S	0.00	0.00	0.00	0.00	0.00
VMP-25M	(0.60)	(0.60)	(0.75)	(0.60)	(0.60)
VMP-10	0.00	0.00	0.00	0.00	0.00
MP-68	0.00	0.00	0.00	0.00	0.00
VMP45S	0.00	0.00	0.00	0.00	0.00
VMP-45VS	0.00	0.00	0.00	0.00	0.00
VMP-9S	0.00	0.00	0.00	0.00	0.00
VMP-9M	0.00	0.00	0.00	0.00	0.00
VMP-9D	0.00	0.00	0.00	0.00	0.00
VMP-11	0.00	0.00	0.00	0.00	0.00
MP-69	0.00	0.00	0.00	0.00	0.00
VMP-46S	0.00	0.00	0.00	0.00	0.00
VMP-46VS	0.00	0.00	0.00	0.00	0.00
MP-70	NR	NR	NR	NR	NR
VMP-47S	(0.20)	(0.25)	(0.15)	(0.10)	0.00
VMP-47VS	(0.20)	(0.25)	(0.15)	(0.10)	(0.10)
VMP-7	(0.10)	(0.20)	(0.20)	(0.10)	(0.10)
VMP-8	0.00	0.00	0.00	0.00	0.00
HMW-38A	(0.10)	(0.20)	(0.25)	(0.10)	(0.10)
HMW-38B	0.00	0.00	0.00	NR	NR

TABLE 3-6
HSVE-20 SVE Pilot Test
Radius of Influence Results (exterior wells and monitoring points)
February 9-10, 2005
Hartford Community Center SVE Pilot Test
The Hartford Working Group / Hartford, Illinois

WELL	DATE				
	2/9/2005	2/9/2005	2/10/2005	2/10/2005	2/10/2005
HMW-38C	NR	NR	NR	NR	NR
VMP-6S	0.00	0.00	0.00	0.00	0.00
VMP-6M	0.00	0.00	0.00	0.00	0.00
VMP6D	0.00	0.00	0.00	0.00	0.00
VMP-23S	0.00	0.00	0.00	0.00	0.00
VMP-23M	(0.80)	(0.70)	(0.90)	(0.70)	(0.70)
VMP-48S	(0.15)	(0.25)	(0.10)	(0.15)	(0.15)
VMP-48VS	(0.60)	(0.60)	(1.75)	(0.60)	(0.10)
MP-73	(1.00)	(0.65)	NR	NR	NR

NOTES:

NR = Not recorded due to one or more factors (loose well caps, transducers, frozen conditions)

(X.XX) = Vacuum readings

X.XX = Pressure Readings

SVE system was down on 2/10/05 from 0100 to 0830.

TABLE 3-7
Summary of Air Analytical Results
Hartford Community Center SVE Pilot Test

The Hartford Working Group / Hartford, Illinois

Date Sampled	Sample ID	Well Location	Well Head Vacuum (inches water)	TPH ppmV	Methane %
02/01/05	Influent	HMW-46A	46	43,000	73
02/01/05	Effluent	HMW-46A	46	1,200	1.9
02/01/05	Influent	HMW-46A	73	49,000	67
02/01/05	Effluent	HMW-46A	73	2,400	2.4
02/03/05	Influent	HMW-46A	100	36,000	54
02/03/05	Effluent	HMW-46A	100	1,600	1.7
02/03/05	Effluent - Duplicate	HMW-46A	100	1,500	1.7
02/10/05	Influent	HSE-20	100	4,700	6.8
02/10/05	Influent - Duplicate	HSE-20	100	4,500	NM
02/10/05	Effluent	HSE-20	100	530	0.56
02/10/05	Effluent - Duplicate	HSE-20	100	460	0.56
02/10/05	Exhaust	HSE-20	100	6	ND

NOTES:

Effluent samples include air dilution and are prior to treatment by the thermal oxidizer

Exhaust samples are from the exhaust stack of the thermal oxidizer

TPH = Total Petroleum Hydrocarbons as Gasoline

ppmV = parts per million - Volume

NM = Not Measured

ND = Non-Detect

APPENDIX A

AIR PERMIT

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

P.O. BOX 19506, SPRINGFIELD, ILLINOIS 62794-9506

RENEE CIPRIANO, DIRECTOR

217/782-2113

JOINT CONSTRUCTION AND OPERATING PERMIT

PERMITTEE

Hartford Working Group
c/o Clayton Group Services
Attn: Jeff Pope
3140 Finley Road
Downers Grove, Illinois 60515

Application No.: 04110065
Applicant's Designation: PILOT TEST
Subject: Pilot Test
Date Issued: December 8, 2004

I.D. No.: 119050AAS
Date Received: November 24, 2004

Operating Permit Expiration Date: December 31, 2005

Location: Various Locations In and Near the Village of Hartford, Hartford

Permit is hereby granted to the above-designated Permittee to CONSTRUCT and OPERATE emission source(s) and/or air pollution control equipment consisting of a various soil vapor extraction pilot tests, which consists of vacuum blowers with gas fired thermal oxidizers and ancillary equipment, as described in the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

1. Operation of the emission source(s) included in this permit shall not begin until all associated air pollution control equipment has been constructed and is operational.

2a. This permit authorizes construction of soil vapor extraction pilot test equipment consisting of vacuum blowers, gas fired thermal oxidizers and ancillary equipment. These pilot tests may be performed at various locations in and near the Village of Hartford to develop a remedy design for the existing contamination to assist in the interim remediation work required by the Administrative Order on Consent from United States Environmental Protection Agency (No. R7003-5-04-001).

b. If pilot testing is proposed that is outside the scope of the authorization provided by this permit, the Permittee shall obtain a new or revised permit for such activity.

3. Each vacuum blower at each location shall be equipped with a thermal oxidizer capable of reducing the volatile organic material (VOM) in the exhaust by at least 99 percent.

4a. This permit is issued based upon minimal emissions of VOM. For this purpose, hourly VOM emissions from all pilot tests being performed under this construction permit combined shall not exceed 1.0 lb/hour at any time. Annual VOM emissions from all pilot tests shall not exceed 1.0 tons in any 12 month period.

b. Compliance with the annual limits shall be determined from a running total of 12 months of data.

5a. The Permittee shall use Illinois EPA and USEPA approved continuous monitoring equipment which shall be installed, calibrated, maintained, and operated according to vendor specifications at all times the thermal oxidizers are in use.

b. The continuous monitoring equipment must monitor the combustion chamber temperature of each thermal oxidizer.

c. The thermal oxidizer combustion chamber shall be preheated to at least the manufacturer's recommended temperature but not lower than 1400°F, before the pilot process is begun, and this temperature shall be maintained during operation of the pilot test.

6. The Permittee shall maintain the following records:

a. The Permittee shall maintain a file which identifies the maximum emissions of VOM from each pilot test and the maximum emissions of all tests combined that will occur, including any actions that will be taken to ensure that Condition 4 is met, with supporting calculations and documentation.

b. Thermal oxidizer records:

i. Thermal oxidizer combustion chamber monitoring data.

ii. A daily log of operating time for the capture system, thermal oxidizer, monitoring device, and the associated emission unit(s).

iii. A maintenance log for the capture system, thermal oxidizer, and monitoring device detailing all routine and non-routine maintenance performed including dates and duration of any outages.

c. Actual operation and emission data.

7a. The Permittee shall notify the Illinois EPA upon termination of the final soil vapor extraction pilot test.

b. The Permittee shall submit, at a minimum, the following information to the Illinois EPA at least 14 days prior to conducting any pilot test under this construction permit:

i. Type of pilot test to be conducted.

ii. Proposed location for the pilot test.

iii. Detailed information regarding the type of equipment to be used.

iv. Proposed dates for the pilot test and expected duration.

v. Expected air discharge rates.

vi. Any other pertinent information related to the expected air discharge.

8. If operation of the pilot process is extended, the Permittee may have to submit an application for a CAAPP permit. The determination whether a CAAPP permit is needed will require a demonstration from the Permittee whether the source at which the process is located is a major source for purposes of CAAPP.

If you have any questions on this, please call Jason Schnepp at 217/782-2113.

Donald E. Sutton

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

DES:JMS:jar

cc: Region 3

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P. O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

July 1, 1985

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless susperseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.

2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.

3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, shall have been submitted to the Agency and a supplemental written permit issued.

4. The permittee shall allow any duly authorized agent of the Agency upon the presentation of credentials, at reasonable times:

   a. to enter the permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit,

   b. to have access to and to copy any records required to be kept under the terms and conditions of this permit,

   c. to inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit,

   d. to obtain and remove samples of any discharge or emissions of pollutants, and

   e. to enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.

5. The issuance of this permit:

   a. shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located,

   b. does not release the permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities,

   c. does not release the permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations,

   d. does not take into consideration or attest to the structural stability of any units or parts of the project, and

e. in no manner implies or suggests that the Agency (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. a. Unless a joint construction/operation permit has been issued, a permit for operation shall be obtained from the Agency before the equipment covered by this permit is placed into operation.

   b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.

7. The Agency may file a complaint with the Board for modification, suspension or revocation of a permit:

   a. upon discovery that the permit application contained misrepresentations, misinformation or false statements or that all relevant facts were not disclosed, or

   b. upon finding that any standard or special conditions have been violated, or

   c. upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.

STATE OF ILLINOIS
ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF AIR POLLUTION CONTROL
P.O. BOX 19506
SPRINGFIELD, ILLINOIS 62794-9506

STANDARD CONDITIONS FOR OPERATING PERMITS

May, 1993

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) grants the Environmental Protection Agency authority to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special permit conditions(s).

1. The issuance of this permit does not release the Permittee from compliance with state and federal regulations which are part of the Illinois State Implementation Plan, as well as with other applicable statues and regulations of the United States or the State of Illinois or with applicable local laws, ordinances and regulations.

2. The Illinois EPA has issued this permit based upon the information submitted by the Permittee in the permit application. Any misinformation, false statement or misrepresentation in the application shall be ground for revocation under 35 Ill. Adm. Code 201.166.

3. a. The Permittee shall not authorize, cause, direct or allow any modification, as defined in 35 Ill. Adm. Code 201.102, of equipment, operations or practices which are reflected in the permit application as submitted unless a new application or request for revision of the existing permit is filed with the Illinois EPA and unless a new permit or revision of the existing permit(s) is issued for such modification.

   b. This permit only covers emission sources and control equipment while physically present at the indicated plant location(s). Unless the permit specifically provides for equipment relocation, this permit is void for an item of equipment on the day it is removed from the permitted location(s) or if all equipment is removed, notwithstanding the expiration date specified on the permit.

4. The Permittee shall allow any duly authorized agent of the Illinois EPA, upon the presentation of credentials, at reasonable times:

   a. To enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit;

   b. To have access to and to copy any records required to be kept under the terms and conditions of this permit;

   c. To inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit;

   d. To obtain and remove samples of any discharge or emission of pollutants; and

   e. To enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring or recording any activity, discharge or emission authorized by this permit.

5. The issuance of this permit:

   a. Shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are located;

b. Does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the facilities;

c. Does not take into consideration or attest to the structural stability of any unit or part of the project; and

d. In no manner implies or suggests that the Illinois EPA (or its officers, agents, or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.

6. The facilities covered by this permit shall be operated in such a manner that the disposal of air contaminants collected by the equipment shall not cause a violation of the Environmental Protection Act or regulations promulgated thereunder.

7. The Permittee shall maintain all equipment covered under this permit in such a manner that the performance of such equipment shall not cause a violation of the Environmental Protection Act or regulations promulgated thereuner.

8. The Permittee shall maintain a maintenance record on the premises for each item of air pollution control equipment. This records shall be made available to any agent of the Environmental Protection Agency at any time during normal working hours and/or operating hours. As a minimum, this record shall show the dates of performance and nature of preventative maintenance activities.

9. No person shall cause or allow continued operation during malfunction, breakdown or startup of any emission source or related air pollution control equipment if such operation would cause a violation of an applicable emission standard or permit limitation. Should a malfunction, breakdown or startup occur which results in emissions in excess of any applicable standard or permit limitation, the Permittee shall:

   a. Immediately report the incident to the Illinois EPA's Regional Field Operations Section Office by telephone, telegraph, or other method as constitutes the fastest available alternative, and shall comply with all reasonable directives of the Illinois EPA with respect to the incident;

   b. Maintain the following records for a period of no less than two (2) years:

      i. Date and duration of malfunction, breakdown, or startup,

      ii. Full and detailed explanation of the cause,

      iii. Contaminants emitted and an estimate of quantity of emissions,

      iv. Measures taken to minimize the amount of emissions during the malfunction, breakdown or startup, and

      v. Measures taken to reduce future occurrences and frequency of incidents.

10. If the permit application contains a compliance program and project completion schedule, the Permittee shall submit a project completion status report within thirty (30) days of any date specified in the compliance program and project completion schedule or at six month intervals, whichever is more frequent.

11. The Permittee shall submit an Annual Emission Report as required by 35 Ill. Adm. Code 201.302 and 35 Ill. Adm. Code Part 254.

Directory
Environmental Protection Agency
Bureau of Air

May 22, 2003

For assistance in preparing a permit application, contact the Permit Section:

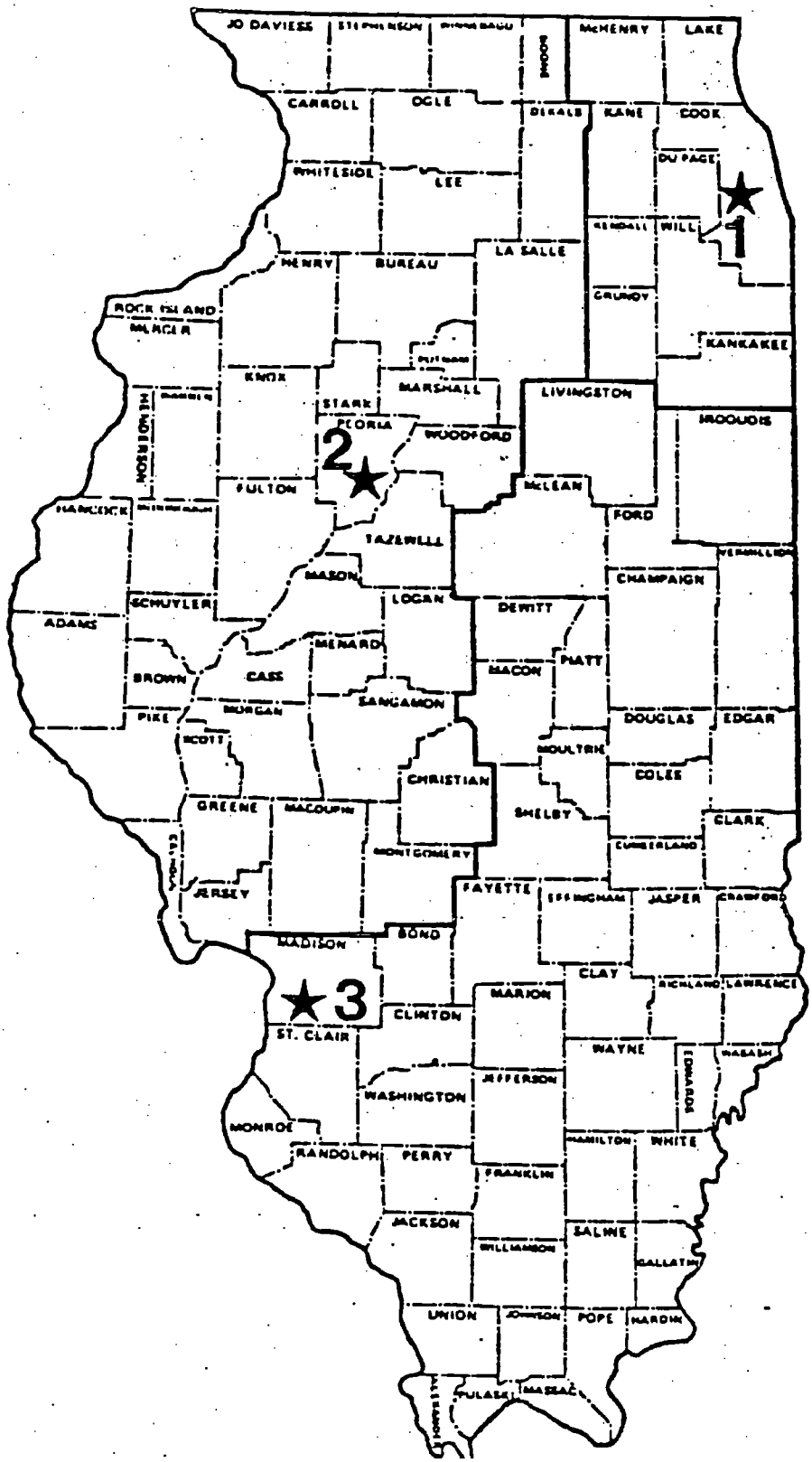
Illinois EPA
Division of Air Pollution Control
Permit Section
1021 N. Grand Ave E.
P.O. Box 19506
Springfield, Illinois 62794-9506
217/782-2113

Or contact a regional office of the Field Operations Section. The regional offices and their areas of responsibility are shown on the map. The addresses and telephone numbers of the regional offices are as follows:

Illinois EPA
Region 1
Bureau of Air, FOS
511 West Harrison
Des Plaines, Illinois 60016
847/294-4000

Illinois EPA
Region 2
4415 North Univiversity
Peoria, Illinois 61614
309/693-5461

Illinois EPA
Region 3
2009 Mall Street
Collinsville, Illinois 62234
618/346-5120



APPENDIX B

EXTRACTION WELL COMPLETION REPORTS AND BORING LOGS

Clayton GROUP SERVICES

BORING NO: HMW-46	WELL NO: NA	PROJECT NO: 15-03095.13-002	PROJECT NAME: Hartford Working Group
BORING LOCATION: Hartford, Illinois		COORDINATES: 791606.83N, 2316601.13E	
DRILLING CO: Transhield	DRILLER: J. Luna	LOGGED BY: A. Schultz	
DRILLING EQUIP: D-50 Geoprobe/Direct Push	SCREEN INTERVAL: NA	CHECKED BY: MMW	
STATIC WATER LEVEL: NA	SCREEN MTL/SLOT: NA	START DATE: 08/02/04	
BOREHOLE DIA: 2 inches	STICKUP: NA	START TIME (hours): 1627	
TOP of CASING ELEVATION: NA	G.S. ELEVATION: 430.87 (HMW-46C)	FINISH DATE: 08/02/04	
RISER DIA/MTL/LGTH: NA	DEV. METHODS: NA	FINISH TIME (hours): 1748	

DEPTH (ft / m)	DESCRIPTION	GRAPHIC	WELL	SAMPLES NUMBER	RECOVERY	METHOD	MOISTURE	BLOW CNT (6")	PID SCAN	PID HEADSPACE	REMARKS
0 / 0	**BLIND AUGER (0.0'-6.0')**		Monitoring Well HMW-46 A Monitoring Well HMW-46 B Monitoring Well HMW-46 C	A	–	HA	–	NA	–	–	Hand auger 0.0'-6.0'
6 / 2	**SILTY CLAY (6.0'-11.2') CL** Brown with orange mottles, moist, stiff, some fine sand, slight petroleum odor			B	1.8/2	HP	M	NA	–	23.3	*Collected sample at 8.0-10.0' for analysis of BETX, MTBE, Lead, and geotechnical analysis
				C	3/4	HP	M	NA	–	42.7	
							M		–	61.9	
12 / 4	**SILT (11.2'-17.6') ML** Gray with orange mottles, moist, with clay, some fine sand Grades to with fine sand at 12.8' 0.4-Foot silty clay seam at 13.2' Wet at 13.6' 0.3-Foot silty clay seam at 14.0' Saturated from 15.7 to 17.4'			D	3/4	HP	M/W	NA	–	114	*Collected sample at 12.0-14.0' for analysis of Skinner List and 12.5'-13.0' for geotechnical analysis
							W/S		–	748	
18 / 6	**CLAYEY SILT (17.6'-26.7') ML** Gray with orange mottles, moist, strong petroleum odor			E	4/4	HP	S	NA	–	470	* Collected sample at 14.0-16.0' for geotechnical analysis
							M		–	1277	

Boring/Well No.: HMW-46 Soil Boring

Clayton GROUP SERVICES

BORING NO: HMW-46 | WELL NO: NA | PROJECT NO: 15-03095.13-002 | PROJECT NAME: Hartford Working Group

DEPTH	DESCRIPTION	GRAPHIC	WELL	SAMPLES NUMBER	RECOVERY	METHOD	MOISTURE	BLOW CNT (6")	PID SCAN	PID HEADSPACE	REMARKS
22			Well HMW-46 B Well HMW-46 C	F	4/4	HP	M	NA	--	746	*Collected sample at 22.0-24.0' for analysis of BETX, MTBE, Lead, and geotechnical analysis
							M		--	1194	
24	0.3-Foot sandy silt seam, with fine sand at 25.3'			G	4/4	HP	M	NA	--	595	
26	8										
							M		--	468	
28	**SILTY CLAY (26.7'-32.0') CL** Gray with orange mottles, moist, stiff			H	4/4	HP	M	NA	--	1361	* Collected sample 28.0-30.0' for geotechnical analysis
30							M		--	112	
32	**NO RECOVER (32.0'-36.0')** (Adjacent well boring identified soils at this depth to be a well graded sand (SW)).			I	0/4	HP	--	NA	--	--	
34	10						--		--	--	
36	**SAND (36.0'-44.0') SW** Brown, saturated, fine to coarse grained, strong petroleum odor			J	2/4	HP	S	NA	--	1225	
38											
							S		--	1086	
40	12										

Clayton GROUP SERVICES

BORING NO: HMW-46	WELL NO: NA	PROJECT NO: 15-03095.13-002	PROJECT NAME: Hartford Working Group

DEPTH	DESCRIPTION	GRAPHIC	WELL	SAMPLES NUMBER	SAMPLES RECOVERY	SAMPLES METHOD	SAMPLES MOISTURE	SAMPLES BLOW CNT (6")	PID SCAN	PID HEADSPACE	REMARKS
42				K	2/4	HP	S	NA	–	1427	
							S		–	77.7	
44	End of Boring at 44.0'										
46 – 14	**This soil boring was advanced for geologic purposes.**										
	See related monitoring well construction forms HMW-46 A, B, and C for details regarding monitoring well construction.										
48											
50											
52											
54 – 16											
56											
58											
60 – 18											

Boring/Well No.: HMW-46 Soil Boring

Clayton GROUP SERVICES

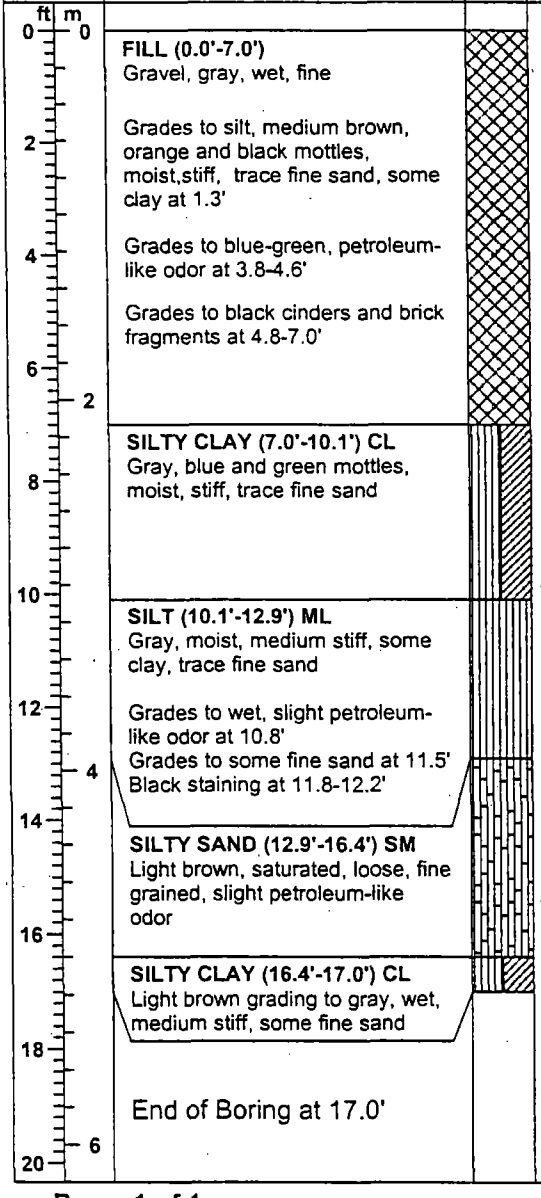
BORING NO: HSVE-20	WELL NO: HSVE-20	PROJECT NO: 15-03095.13-005	PROJECT NAME: Hartford Working Group
BORING LOCATION: Hartford Community Center, Hartford, IL		COORDINATES:	
DRILLING CO: Terra Drill	DRILLER: J. Gates		LOGGED BY: B. Martin
DRILLING EQUIP: Hand Auger / CME-75 Rig	SCREEN INTERVAL: 6.0'-16.0'		CHECKED BY:
STATIC WATER LEVEL: DRY	SCREEN MTL/SLOT: PVC / 0.02		START DATE: 2/8/05
BOREHOLE DIA: 6.25"	STICKUP:		START TIME (hours): 1415
TOP of CASING ELEVATION:	G.S. ELEVATION:		FINISH DATE: 2/8/05
RISER DIA/MTL/LGTH: 4"/PVC/6'	DEV. METHODS:		FINISH TIME (hours): 2030

DEPTH (ft / m)	DESCRIPTION	GRAPHIC	WELL	SAMPLES NUMBER	RECOVERY	METHOD	MOISTURE	BLOW CNT (6")	PID SCAN	PID HEADSPACE	REMARKS
0 / 0	**FILL (0.0' -2.0')** Silty clay, dark brown, moist, trace find sand and gravel, stiff			A	--	HA	M	NA	--	0.0	Hand augered from 0.0-10.0'
2	**CLAYEY SILT (2.0'-6.0') ML** Brown, moist, trace fine sand, stiff			B	--	HA	M	NA	--	1.1	
4				C	--	HA	M	NA	--	2.0	
6 / 2	**SILTY CLAY (6.0'-10.0') CL** Gray, moist, trace fine sand, stiff			D	--	HA	M	NA	--	4.0	
8				E	--	HA	M	NA	--	90.0	
10	**SILT (10.0'-16.0') ML** Gray, saturated, trace fine sand, petroleum-like odor			F	1.6/2	SS	M	--	--	340.0	
12	0.5 foot silty clay seam, gray, moist, trace fine sand at 10.5'			G	1.3/2	SS	M	--	--	430.0	
14 / 4	0.5 foot silty clay seam, gray, moist, trace fine sand at 11.5'			H	--	SS	M	--	--	--	
16	End of Boring at 16.0' **See monitoring well consturction form HSVE-20 for details regarding monitoring well construction.**										
18											
20 / 6											

Boring/Well No.: HSVE-20

Clayton GROUP SERVICES

BORING NO: MP-68	WELL NO: MP-68	PROJECT NO: 15-03095.13-005	PROJECT NAME: Hartford Working Group
BORING LOCATION: Hartford Community Center, Hartford, IL		COORDINATES: 791409.88 (N), 2316734.98 (E)	
DRILLING CO: Terra Drill	DRILLER: J. Gates		LOGGED BY: H. Mendygral
DRILLING EQUIP: ATV Rig	SCREEN INTERVAL: 9.8'-17.0'		CHECKED BY: M. Mueller
STATIC WATER LEVEL: NA	SCREEN MTL/SLOT: PVC / 0.01		START DATE: 11/29/04
BOREHOLE DIA: 8.5"	STICKUP: NA		START TIME (hours): 1200
TOP of CASING ELEVATION: 431.36	G.S. ELEVATION: 431.6		FINISH DATE: 11/29/04
RISER DIA/MTL/LGTH: 1" / PVC / 9.5'	DEV. METHODS: NA		FINISH TIME (hours): 1340



DEPTH	DESCRIPTION	GRAPHIC	WELL	SAMPLES NUMBER	RECOVERY	METHOD	MOISTURE	BLOW CNT (6")	PID SCAN	PID HEADSPACE	REMARKS
0	**FILL (0.0'-7.0')** Gravel, gray, wet, fine				0/1	SS	--	--	--	--	Did not hand auger due to building foundations
2	Grades to silt, medium brown, orange and black mottles, moist,stiff, trace fine sand, some clay at 1.3'			A	1.5/2	SS	W/M	4 10 10 12	--	0.1	
4	Grades to blue-green, petroleum-like odor at 3.8-4.6'			B	1.8/2	SS	M	4 4 7 10	--	0.8	
6	Grades to black cinders and brick fragments at 4.8-7.0'			C	0.6/2	SS	M	3 18 15 1	--	0	
8	**SILTY CLAY (7.0'-10.1') CL** Gray, blue and green mottles, moist, stiff, trace fine sand			D	2/2	SS	M	3 7 6 8	--	0	
10	**SILT (10.1'-12.9') ML** Gray, moist, medium stiff, some clay, trace fine sand			E	1.8/2	SS	M/W	2 3 3 5	--	10.3	
12	Grades to wet, slight petroleum-like odor at 10.8'			F	1.5/2	SS	W	2 4 4 4	--	16.9	
14	Grades to some fine sand at 11.5' Black staining at 11.8-12.2' **SILTY SAND (12.9'-16.4') SM** Light brown, saturated, loose, fine grained, slight petroleum-like odor			G	1.8/2	SS	S	3 2 2 3	--	17.4	
16				H	1.5/2	SS	S/W	- 1 2 3	--	1.6	
18	**SILTY CLAY (16.4'-17.0') CL** Light brown grading to gray, wet, medium stiff, some fine sand										
20	End of Boring at 17.0'										

Boring/Well No.: MP-68

Clayton
GROUP SERVICES

BORING NO: MP-69	WELL NO: MP-69	PROJECT NO: 15-03095.13-005	PROJECT NAME: Hartford Working Group
BORING LOCATION: Hartford Community Center, Hartford, IL		COORDINATES: 791425.49 (N), 2316686.00 (E)	
DRILLING CO: Terra Drill	DRILLER: J. Gates		LOGGED BY: H. Mendygral
DRILLING EQUIP: ATV Rig	SCREEN INTERVAL: 11.6' - 16.5'		CHECKED BY: M. Mueller
STATIC WATER LEVEL: NA	SCREEN MTL/SLOT: PVC / 0.010"		START DATE: 11/29/04
BOREHOLE DIA: 8.5"	STICKUP: N/A		START TIME (hours): 1450
TOP of CASING ELEVATION: 431.57	G.S. ELEVATION: 431.7		FINISH DATE: 11/29/04
RISER DIA/MTL/LGTH: 1" / PVC / 10.5	DEV. METHODS: NA		FINISH TIME (hours): 1600

DEPTH (ft / m)	DESCRIPTION	GRAPHIC	WELL	SAMPLES NUMBER	RECOVERY	METHOD	MOISTURE	BLOW CNT (6")	PID SCAN	PID HEADSPACE	REMARKS
0 / 0	**FILL (0.0'-5.0')** Gravel, gray, wet, fine				0/1	--	--	--	--	--	
2	Grades to silt, medium brown, moist, stiff, trace fine sand and gravel at 1.0'			A	1.6/2	SS	M	4 6 6 9	--	0	
4	Grades to brick fragments from 4.0'-5.0'			B	1.0/2	SS	M	3 3 6 5	--	0	
6 / 2	**CLAYEY SILT (5.0'-7.5') ML** Medium brown, orange mottles, moist, stiff, trace fine sand			C	1.8/2	SS	M	3 4 8 10	--	0	
8	**SILTY CLAY (7.5'-9.0') CL** Gray, brown mottles, moist, stiff, trace fine sand			D	1.5/2	SS	M	3 4 5 6	--	0	
10	**CLAYEY SILT (9.0'-12.0') ML** Medium brown, gray mottles, moist, medium stiff, trace fine sand			E	1.8/2	SS	M	2 2 5 6	--	0.5	
12 / 4	**SILT (12.0'-16.0') ML** Medium brown, gray mottles, wet, medium stiff, with clay, some fine sand, petroleum-like odor			F	1.6/2	SS	W	2 2 3 4	--	20.0	
14	Grades to gray, soft, some clay and fine sand at 13.5'			G	1/2	SS	W	1 1 1 2	--	36.5	
16	**SILTY CLAY (16.0'-17.5') CL** Gray, wet grading to moist, medium stiff, trace fine sand, high plasticity			H	1.5/2	SS	W/M	2 3 4 3	--	3.5	
18 / 6	End of Boring at 17.5'			I	0.5/0.5	SS	M	--	--	--	
20											

Boring/Well No.: MP-69

Clayton GROUP SERVICES

BORING NO: MP-70	WELL NO: MP-70	PROJECT NO: 15-03095.13-005	PROJECT NAME: Hartford Working Group
BORING LOCATION: Hartford Community Center, Hartford, IL		COORDINATES: 791483.76 (N), 2316623.95 (E)	
DRILLING CO: Terra Drill	DRILLER: J. Gates		LOGGED BY: H. Mendygral
DRILLING EQUIP: Hand Auger / ATV Rig	SCREEN INTERVAL: 10.5'-16.5'		CHECKED BY: M. Mueller
STATIC WATER LEVEL: NA	SCREEN MTL/SLOT: PVC / 0.010"		START DATE: 11/30/04
BOREHOLE DIA: 8.5"	STICKUP: NA		START TIME (hours): 0734
TOP of CASING ELEVATION: 431.00	G.S. ELEVATION: 431.4		FINISH DATE: 11/30/04
RISER DIA/MTL/LGTH: 1" / PVC / 10.5'	DEV. METHODS: NA		FINISH TIME (hours): 0827

DEPTH (ft / m)	DESCRIPTION	GRAPHIC	WELL	SAMPLES NUMBER	RECOVERY	METHOD	MOISTURE	BLOW CNT (6")	PID SCAN	PID HEADSPACE	REMARKS
0 / 0	**TOPSOIL (0.0'-1.0')** Dark brown, roots										
	SILT (1.0'-5.0') ML Medium brown, wet, trace fine sand and gravel			A	5/5	HA	W	—	—	0	Soil wet due to rain from 0.0'-5.0'
4							W	—	—	0	
6 / 2	**CLAYEY SILT (5.0'-6.9') ML** Medium brown, moist,stiff, trace fine sand, slight petroleum-like odor			B	1.8/2	SS	M	2 3 6 7	—	1.5	
8	**SILTY CLAY (6.9'-9.5') CL** Medium brown, gray mottles, moist, stiff, trace fine sand, stiff, slight petroleum-like odor			C	1.7/2	SS	M	3 4 6 7	—	1.8	
10	**CLAYEY SILT (9.5'-10.5') ML** Medium brown, gray mottles, moist, medium stiff, some fine sand, slight petroleum-like odor			D	1.6/2	SS	M	2 3 4 6	—	0.3	
12 / 4	**SILT (10.5'-12.4') ML** Medium brown, moist, medium stiff, some fine sand, trace clay, slight petroleum-like odor Grades to gray, wet at 11.0' Grades to black staining at 12.3'			E	1.7/2	SS	W	2 3 5 4	—	8.9	
14	**SILTY SAND (12.4'-16.3') SM** Medium brown, wet, loose, fine grained, slight petroleum-like odor Grades saturated at 14.3'			F	1.6/2	SS	W/S	3 3 2 3	—	13.4	
16				G	1.8/2	SS	W	1 1 2 3	—	0	
18	**SILTY CLAY (16.3'-17.0') CL** Gray, wet, soft, trace fine sand, high plasticity										
20 / 6	End of Boring at 17.0'										

Boring/Well No.: MP-70

Clayton
GROUP SERVICES

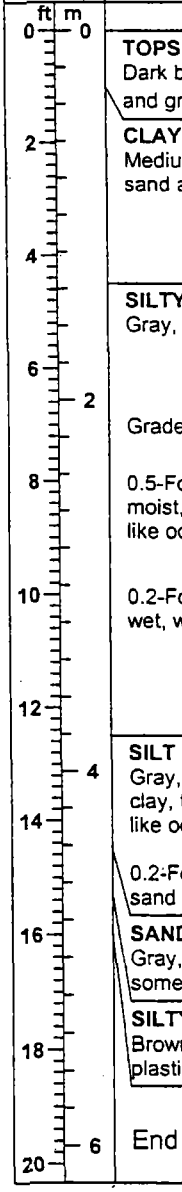
BORING NO: MP-71	WELL NO: MP-71	PROJECT NO: 15-03095.13-005	PROJECT NAME: Hartford Working Group
BORING LOCATION: Hartford Community Center, Hartford, IL		COORDINATES: 791568.76 (N), 2316505.74 (E)	
DRILLING CO: Terra Drill	DRILLER: J. Gates	LOGGED BY: H. Mendygral	
DRILLING EQUIP: Hand Auger / ATV Rig	SCREEN INTERVAL: 12.7' - 16.0'	CHECKED BY: M. Mueller	
STATIC WATER LEVEL: NA	SCREEN MTL/SLOT: PVC / 0.010"	START DATE: 11/30/04	
BOREHOLE DIA: 8.5"	STICKUP: NA	START TIME (hours): 0945	
TOP of CASING ELEVATION: 430.14	G.S. ELEVATION: 430.3	FINISH DATE: 11/30/04	
RISER DIA/MTL/LGTH: 1" / PVC / 12.7'	DEV. METHODS: NA	FINISH TIME (hours): 1045	

DEPTH (ft / m)	DESCRIPTION	GRAPHIC	WELL	SAMPLES NUMBER	RECOVERY	METHOD	MOISTURE	BLOW CNT (6")	PID SCAN	PID HEADSPACE	REMARKS
0 / 0	**TOPSOIL (0.0'-1.0')** Dark brown,wet, trace fine sand and gravel, roots										Hand Augered from 0-5 feet
2	**SILTY CLAY (1.0'-4.5') CL** Medium brown grading to gray, wet, trace fine sand and gravel			A	5/5	HA	W	—	—	0	
4							W	—	—	0	Wet soil due to rain from 0.0'-5.0'
6 / 2	**CLAYEY SILT (4.5'-7.1') ML** Gray, brown mottles, moist, stiff, trace fine sand, slight petroleum-like odor			B	1.6/2	SS	M	2 3 6 7	—	1.7	
8	**SILTY CLAY (7.1'-10.0') CL** Medium brown, gray mottles, moist, medium stiff, trace fine sand, slight petroleum-like odor			C	1.8/2	SS	M	2 2 3 3	—	3.6	
10	**CLAYEY SILT (10.0'-13.0') ML** Medium brown, gray mottles, wet, trace fine sand, slight petroleum-like odor			D	1.9/2	SS	M/W	3 4 4 3	—	8.9	
12 / 4	0.2-Foot silt, wet, soft seam at 11.5' Moist, soft at 11.7'			E	1.7/2	SS	M	1 1 2 3	—	7.3	
14	**SILT (13.0'-15.5') ML** Gray, saturated, soft, some fine sand, trace clay, petroleum-like odor, sheen			F	1.8/2	SS	M/S	1 1 1 1	—	20.4	
16	**SILTY CLAY (15.5'-17.0') CL** Brown, moist, medium stiff, trace fine sand			G	1.9/2	SS	S/M	1 2 4 4	—	0.5	
18 / 6	End of Boring at 17.0'										
20											

Boring/Well No.: MP-71

Clayton
GROUP SERVICES

BORING NO: MP-72	WELL NO: MP-72	PROJECT NO: 15-03095.13-005	PROJECT NAME: Hartford Working Group
BORING LOCATION: Hartford Community Center, Hartford, IL		COORDINATES: 791584.88 (N), 2316565.29 (E)	
DRILLING CO: Terra Drill	DRILLER: J. Gates		LOGGED BY: H. Mendygral
DRILLING EQUIP: Hand Auger / ATV Rig	SCREEN INTERVAL: 11.6'-16.0'		CHECKED BY: M. Mueller
STATIC WATER LEVEL: NA	SCREEN MTL/SLOT: PVC / 0.01		START DATE: 11/30/04
BOREHOLE DIA: 8.5"	STICKUP: NA		START TIME (hours): 1245
TOP of CASING ELEVATION: 430.51	G.S. ELEVATION: 430.8		FINISH DATE: 11/30/04
RISER DIA/MTL/LGTH: 1" / PVC / 11.6'	DEV. METHODS: NA		FINISH TIME (hours): 1345



DEPTH (ft / m)	DESCRIPTION	SAMPLES NUMBER	RECOVERY	METHOD	MOISTURE	BLOW CNT (6")	PID SCAN	PID HEADSPACE	REMARKS
0 / 0	**TOPSOIL (0.0' - 1.0')** Dark brown, wet, trace fine sand and gravel	A	4.5/4.5	HA	W	–	–	0	Hand Augered from 0-4.5 feet
2	**CLAYEY SILT (1.0' - 4.5') ML** Medium brown, wet, trace fine sand and gravel								
4					W	–	–	0	Soil wet from 0.0'-4.5' due to rain
6 / 2	**SILTY CLAY (4.5' - 12.5') CL** Gray, brown mottles, moist, soft	B	1.5 / 2	SS	M	1 1 3 3	–	0.1	
8	Grades medium stiff at 8.0'	C	1.7 / 2	SS	M	1 2 3 4	–	0.1	
10	0.5-Foot clayey silt seam, gray, moist, with fine sand, petroleum-like odor at 10.0'	D	1.5 / 2	SS	M	1 2 3 4	–	0	
12	0.2-Foot clayey silt seam, gray, wet, with fine sand at 12.0'	E	1.7 / 2	SS	M/W	2 2 3 3	–	9.8	
14 / 4	**SILT (12.5' - 14.5') ML** Gray, wet, medium stiff, some clay, trace fine sand, petroleum-like odor	F	1.5 / 2	SS	W	3 3 2 2	–	17.6	*Collected soil sample at 13.5'-15.5' for geotechnical analysis
	0.2-Foot silty clay, with trace fine sand seam at 14.3'	G	1 / 2	SS	W/M	1 2 –	–	18.5	
16	**SANDY SILT (14.5' - 15.3') ML** Gray, wet, soft, fine grained, some clay, petroleum-like odor								
18	**SILTY CLAY (15.3' - 16.0') CL** Brown, moist, soft, medium plasticity								
20 / 6	End of Boring at 16.0'								

Boring/Well No.: MP-72

Clayton
GROUP SERVICES

BORING NO: MP-73	WELL NO: MP-73	PROJECT NO: 15-03095.13-005	PROJECT NAME: Hartford Working Group
BORING LOCATION: Hartford Community Center, Hartford, IL		COORDINATES: 791586.05 (N), 2316662.38 (E)	
DRILLING CO: Terra Drill	DRILLER: J. Gates	LOGGED BY: S. Peterson	
DRILLING EQUIP: Hand Auger / ATV Rig	SCREEN INTERVAL: 8.7'-16.85'	CHECKED BY: H. Mendygral	
STATIC WATER LEVEL: NA	SCREEN MTL/SLOT: PVC / 0.01	START DATE: 12/8/04	
BOREHOLE DIA: 8.5"	STICKUP: NA	START TIME (hours): 0756	
TOP of CASING ELEVATION: 430.96	G.S. ELEVATION: 431.1	FINISH DATE: 12/8/04	
RISER DIA/MTL/LGTH: 1" / PVC / 8.4'	DEV. METHODS: NA	FINISH TIME (hours): 0950	

DEPTH (ft / m)	DESCRIPTION	GRAPHIC	WELL	SAMPLES NUMBER	RECOVERY	METHOD	MOISTURE	BLOW CNT (6")	PID SCAN	PID HEADSPACE	REMARKS
0 / 0	**TOPSOIL (0.0' - 3.0')** Brown, wet, organic material			A	4.8/4.8	HA	W	--	--	5.9	Hand Augered from 0-4.8'
4	**CLAYEY SILT (3.0'-5.3') ML** Medium brown, moist, trace fine sand				0		W/M	--	--	2.1	
6 / 2	**SILTY CLAY (5.3'-9.3') CL** Gray, brown mottles, moist, stiff, petroleum odor			B	1.6/2	SS	M	2 4 7 8	--	53.7	
8				C	1.8/2	SS	M	2 4 5 8	--	53.9	
10				D	1.5 / 2	SS	M	3 3 4 8	--	41.3	
12	**SILT (9.3'-15.6') ML** Gray, brown mottles, moist, medium stiff, some fine sand, trace clay, strong petroleum-like odor 0.3-Foot silty clay seam gray, brown mottles, moist, petroleum-like odor at 9.8' Grades to gray, wet at 11.8' 0.2-Foot clayey silt seam, gray, brown mottles, moist at 12.5' Grades saturated at 14.0' Grades wet at 14.8'			E	1.9/2	SS	M/W	2 5 4 7	--	1156	
14 / 4				F	1.6/2	SS	W/S	3 3 4 7	--	711	
16				G	1.8/2	SS	W/S	1 1 2 1	--	78.2	
18	**SANDY SILT (15.6'-16.7') ML** Gray, saturated, soft, fine grained, strong petroleum-like odor			H	1/1	SS	M	--	--	340	
20 / 6	**SILTY CLAY (16.7'-17.8') CL** Gray, brown mottles, moist										
22	End of Boring at 17.8'										

Boring/Well No.: MP-73

Clayton GROUP SERVICES

BORING NO: MP-74	WELL NO: MP-74	PROJECT NO: 15-03095.13-005	PROJECT NAME: Hartford Working Group
BORING LOCATION: Hartford Community Center, Hartford, IL		COORDINATES: 791569.46 (N), 2316718.98 (E)	
DRILLING CO: Terra Drill	DRILLER: J. Gates	LOGGED BY: S. Peterson	
DRILLING EQUIP: Hand Auger / ATV Rig	SCREEN INTERVAL: 10.85'-17.85'	CHECKED BY: H. Mendygral	
STATIC WATER LEVEL: NA	SCREEN MTL/SLOT: PVC / 0.01	START DATE: 12/8/04	
BOREHOLE DIA: 8.5"	STICKUP: NA	START TIME (hours): 1356	
TOP of CASING ELEVATION: 431.38	G.S. ELEVATION: 431.6	FINISH DATE: 12/8/04	
RISER DIA/MTL/LGTH: 1" / PVC / 10.55'	DEV. METHODS: NA	FINISH TIME (hours): 1505	

DEPTH (ft / m)	DESCRIPTION	GRAPHIC	WELL	SAMPLES NUMBER	RECOVERY	METHOD	MOISTURE	BLOW CNT (6")	PID SCAN	PID HEADSPACE	REMARKS
0 / 0	**FILL (0.0' - 2.0')** Silty clay, brown, moist, trace fine sand			A	5/5	HA	M	–	–	–	Hand Augered from 0-5'
2	**TOPSOIL (2.0' - 3.5')** Dark brown, moist, organic material										
4	**CLAYEY SILT (3.5' - 4.5') ML** Medium brown, moist, trace fine sand						M	–	–	25.9	
6 / 2	**SILTY CLAY (4.5' - 10.8') CL** Gray, brown mottles, moist, medium stiff, trace fine sand			B	1.6/2	SS	M	1 2 4 5	–	22.9	
8	Grades to dark gray, brown mottles at 5.3'			C	2/2	SS	M	1 3 4 5	–	34.2	
10	Grades to gray at 7.0'			D	2/2	SS	M	- 2 2 6	–	41.1	
12	**SILT (10.8' - 17.6') ML** Gray, moist, soft, some fine sand, trace clay, petroleum-like odor			E	2/2	SS	M/W	- 1 2 2	–	33.8	
14 / 4	0.3-Foot silty clay seam, gray, brown mottles, moist, stiff, at 11.9' Grades to wet at 12.2'			F	1.6/2	SS	W	- 2 1 1	–	23.3	
16	Grades to moist, some clay at 13.6'-14.5' Grades to saturated at 16.4'			G	2/2	SS	W/S	- 1 1 2	–	35.7	
18	**SILTY CLAY (17.6' - 19.0') CL** Gray, brown mottles, moist, soft, petroleum-like odor			H	1.5/2	SS	S/M	1 1 2 3	–	37.7	
20 / 6	End of Boring at 19.0'										

Boring/Well No.: MP-74

Clayton
GROUP SERVICES

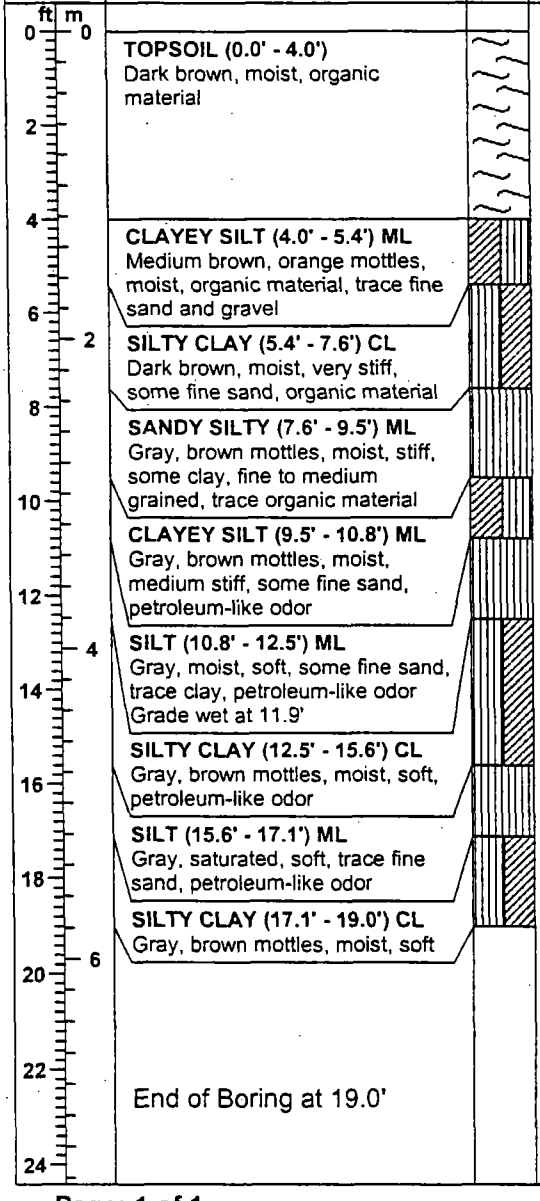
BORING NO: MP-75	WELL NO: MP-75	PROJECT NO: 15-03095.13-005	PROJECT NAME: Hartford Working Group
BORING LOCATION: Hartford Community Center, Hartford, IL		COORDINATES: 791614.17 (N), 2316753.09 (E)	
DRILLING CO: Terra Drill	DRILLER: J. Gates	LOGGED BY: S. Peterson	
DRILLING EQUIP: Hand Auger / ATV Rig	SCREEN INTERVAL: 11.5'-18.35'	CHECKED BY: H. Mendygral	
STATIC WATER LEVEL: NA	SCREEN MTL/SLOT: PVC / 0.01	START DATE: 12/9/04	
BOREHOLE DIA: 8.5"	STICKUP: NA	START TIME (hours): 0650	
TOP of CASING ELEVATION: 430.66	G.S. ELEVATION: 430.8	FINISH DATE: 12/9/04	
RISER DIA/MTL/LGTH: 1" / PVC / 11.2'	DEV. METHODS: NA	FINISH TIME (hours): 0820	

DEPTH (ft / m)	DESCRIPTION	GRAPHIC	WELL	SAMPLES NUMBER	RECOVERY	METHOD	MOISTURE	BLOW CNT (6")	PID SCAN	PID HEADSPACE	REMARKS
0 / 0	**TOPSOIL (0.0' - 2.0')** Dark brown, moist, organic material, trace fine sand			A	5/5	HA	M	–	–	1.6	Hand Augered from 0-5'
2	**CLAYEY SILT (2.0' - 3.0') ML** Brown, moist, trace fine sand										
4	**SILTY CLAY (3.0' - 9.9') CL** Gray, brown mottles, moist, stiff, trace fine sand						M	–	–	1.7	
6 / 2				B	1.6/2	SS	M	2 4 5 7	–	2.9	
8	Petroleum-like odor at 7.2'			C	2/2	SS	M	2 4 5 6	–	9.3	
10	**CLAYEY SILT (9.9' - 11.5') ML** Gray, brown mottles, moist, medium stiff, trace fine sand			D	1.6/2	SS	M	2 3 3 4	–	15.2	
12	**SILT (11.5'-17.9') ML** Gray, moist, medium stiff, some fine sand, trace clay, strong petroleum-like odor			E	1.7/2	SS	M	1 2 3 4	–	29.7	
14 / 4	0.3-Foot silty clay seam, gray, brown mottles, moist, at 11.9'			F	1.5/2	SS	M/W	2 2 2 2	–	15.8	
16	Grades to wet at 14.1' Grades to saturated at 16.3'			G	1.2/2	SS	W/S	1 1 1 1	–	13.6	
18	**SILTY CLAY (17.9' - 19.0') CL** Gray, brown mottles, moist, soft			H	1.6/2	SS	S	- 1 1 2	–	12.5	
20 / 6	End of Boring at 19.0'										

Boring/Well No.: MP-75

Clayton
GROUP SERVICES

BORING NO: MP-76	WELL NO: MP-76	PROJECT NO: 15-03095.13-005	PROJECT NAME: Hartford Working Group
BORING LOCATION: Hartford Community Center, Hartford, IL		COORDINATES: 791580.93 (N), 2316776.87 (E)	
DRILLING CO: Terra Drill	DRILLER: J. Gates	LOGGED BY: S. Peterson	
DRILLING EQUIP: Hand Auger / ATV Rig	SCREEN INTERVAL: 10.5'-17.35'	CHECKED BY: H. Mendygral	
STATIC WATER LEVEL: NA	SCREEN MTL/SLOT: PVC / 0.01	START DATE: 12/9/04	
BOREHOLE DIA: 8.5"	STICKUP: NA	START TIME (hours): 1135	
TOP of CASING ELEVATION: 430.75	G.S. ELEVATION: 430.9	FINISH DATE: 12/9/04	
RISER DIA/MTL/LGTH: 1" / PVC / 10.2'	DEV. METHODS: NA	FINISH TIME (hours): 1412	



DEPTH	DESCRIPTION	GRAPHIC	WELL	SAMPLES NUMBER	RECOVERY	METHOD	MOISTURE	BLOW CNT (6")	PID SCAN	PID HEADSPACE	REMARKS
0	**TOPSOIL (0.0' - 4.0')** Dark brown, moist, organic material			A	5/5	HA	M	--	--	5.3	Hand Augered from 0-5'
4							M	--	--	6.6	
4	**CLAYEY SILT (4.0' - 5.4') ML** Medium brown, orange mottles, moist, organic material, trace fine sand and gravel			C	1.6/2	SS	M	4 7 8 11	--	7.1	*Collected sample at 5-7' for hydraulic conductivity analysis
6	**SILTY CLAY (5.4' - 7.6') CL** Dark brown, moist, very stiff, some fine sand, organic material										
8	**SANDY SILTY (7.6' - 9.5') ML** Gray, brown mottles, moist, stiff, some clay, fine to medium grained, trace organic material			D	1.7/2	SS	M	3 4 5 6	--	6.6	
10				E	1.5/2	SS	M	1 2 4 4	--	6.4	
12	**CLAYEY SILT (9.5' - 10.8') ML** Gray, brown mottles, moist, medium stiff, some fine sand, petroleum-like odor			F	1.5/2	SS	M/W	1 2 2 3	--	6.5	
14	**SILT (10.8' - 12.5') ML** Gray, moist, soft, some fine sand, trace clay, petroleum-like odor Grade wet at 11.9'			G	0/2	SS	-	1 1 2 1	--	-	
16	**SILTY CLAY (12.5' - 15.6') CL** Gray, brown mottles, moist, soft, petroleum-like odor			H	2/2	SS	S	3 1 1 1	--	3.9	
18	**SILT (15.6' - 17.1') ML** Gray, saturated, soft, trace fine sand, petroleum-like odor			I	2/2	SS	S/M	- 1 2 3	--	4.3	
20	**SILTY CLAY (17.1' - 19.0') CL** Gray, brown mottles, moist, soft										
22	End of Boring at 19.0'										
24											

Illinois Environmental Protection Agency Well Completion Report

SITE #: 1190505040 COUNTY: Madison WELL #: HMW-46A

SITE NAME: Village of Hartford, Illinois BOREHOLE #: HMW-46

STATE PLANE COORDINATE: X 2316602.73E Y 791594.82N (or) LATITUDE: _____ LONGITUDE: _____

SURVEYED BY: Crawford, Murphy, and Tilly Inc. ILL REGISTRATION #: 035-002214

DRILLING CONTRACTOR: MRK DRILLER: J. Barker

CONSULTING FIRM: Clayton Group Services, Inc. GEOLOGIST: G. Tiernan

DRILLING METHOD: Hollow Stem Auger DRILLING FLUIDS (TYPE): None

LOGGED BY: G. Tiernan DATE STARTED: 08/18/04 DATE FINISHED: 08/18/04

REPORT FORM COMPLETED BY: M. Mueller DATE: 02/16/2005

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: Grout

INSTALLATION METHOD: Tremie Pipe

SETTING TIME: ~24 hr

TYPE OF BENTONITE SEAL-

GRANULAR, PELLET, SLURRY, CHIPS (CIRCLE ONE)

INSTALLATION METHOD: Poured

SETTING TIME: —

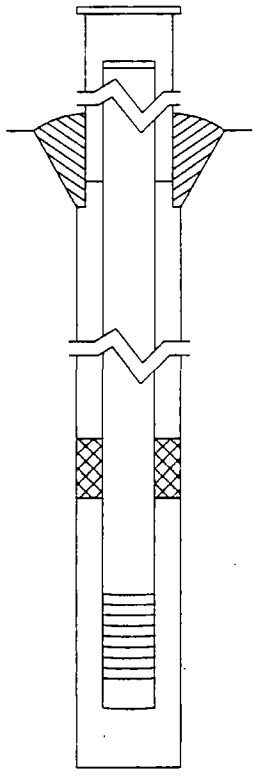
TYPE OF SAND PACK: Industrial Quartz

GRAIN SIZE: 01

INSTALLATION METHOD: Poured

TYPE OF BACKFILL MATERIAL: Not Applicable (IF APPLICABLE)

INSTALLATION METHOD: Not Applicable



	ELEVATIONS (MSL) *	DEPTHS (BGS)	(.01 ft)
TOP OF PROTECTIVE CASING	431.04	0	
TOP OF RISER PIPE	430.51	0.53	
GROUND SURFACE	431.04	0	
TOP OF ANNULAR SEALANT	428.04	3.00	
STATIC WATER LEVEL (AFTER COMPLETION)	----	----	
TOP OF SEAL	424.04	7.00	
TOP OF SANDPACK	421.04	10.00	
TOP OF SCREEN	419.94	11.10	
BOTTOM OF SCREEN	413.24	17.80	
BOTTOM OF WELL	412.94	18.10	
BOTTOM OF BOREHOLE	412.94	18.10	

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS

(CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR (OTHER:) Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:
SCREEN	SS304, SS316, PTFE, (PVC) OR OTHER:

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in.)	8.5
ID OF RISER PIPE (in)	2
PROTECTIVE CASING LENGTH (ft)	1.0
RISER PIPE LENGTH (ft)	10.57
BOTTOM OF SCREEN TO END CAP (ft)	0.3
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	6.7
TOTAL LENGTH OF CASING (ft)	17.57
SCREEN SLOT SIZE **	0.010"

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency Well Completion Report

SITE #: 1190505040 COUNTY: Madison WELL #: HSVE-20

SITE NAME: Village of Hartford, Illinois BOREHOLE #: HSVE-20

STATE PLANE COORDINATE: X _____ Y _____ (or) LATITUDE: _____ LONGITUDE: _____

SURVEYED BY: _____ ILL REGISTRATION #: _____

DRILLING CONTRACTOR: Terra Drill DRILLER: J. Gates

CONSULTING FIRM: Clayton Group Services, Inc. GEOLOGIST: B. Martin

DRILLING METHOD: Hollow Stem Auger DRILLING FLUIDS (TYPE): None

LOGGED BY: B. Martin DATE STARTED: 02/08/05 DATE FINISHED: 02/08/05

REPORT FORM COMPLETED BY: L. Smith DATE: 2/21/2005 REVISED: 3/16/2005 (MEM)

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: N/A

TYPE OF ANNULAR SEALANT: N/A

INSTALLATION METHOD: N/A

SETTING TIME: N/A

TYPE OF BENTONITE SEAL-

GRANULAR, PELLET, SLURRY, (CHIPS)
(CIRCLE ONE)

INSTALLATION METHOD: Poured

SETTING TIME: 24 hrs.

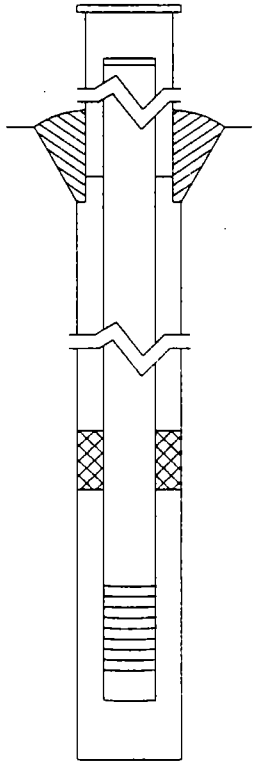
TYPE OF SAND PACK: Industrial Quartz

GRAIN SIZE: 01

INSTALLATION METHOD: Poured

TYPE OF BACKFILL MATERIAL: NA
(IF APPLICABLE)

INSTALLATION METHOD: N/A



ELEVATIONS (MSL) *	DEPTHS (BGS) (.01 ft)	
	0	TOP OF PROTECTIVE CASING
	-1.0	TOP OF RISER PIPE
	0	GROUND SURFACE
N/A	N/A	TOP OF ANNULAR SEALANT
--	--	STATIC WATER LEVEL (AFTER COMPLETION)
	0	TOP OF SEAL
	5.6	TOP OF SANDPACK
	6.2	TOP OF SCREEN
	15.8	BOTTOM OF SCREEN
	16.4	BOTTOM OF WELL
	16.4	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS

(CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR (OTHER):	None
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, (PVC) OR OTHER:	
SCREEN	SS304, SS316, PTFE, (PVC) OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in.)	10.5
ID OF RISER PIPE (in)	4
PROTECTIVE CASING LENGTH (ft)	N/A
RISER PIPE LENGTH (ft)	7.20
BOTTOM OF SCREEN TO END CAP (ft)	0.6
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	9.6
TOTAL LENGTH OF CASING (ft)	17.40
SCREEN SLOT SIZE **	0.020"

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency Well Completion Report

SITE #: 1190505040 COUNTY: Madison WELL #: MP-68

SITE NAME: Village of Hartford, Illinois BOREHOLE #: MP-68

STATE PLANE COORDINATE: X 2316734.98 E Y 791409.88 N (or) LATITUDE: _____ LONGITUDE: _____

SURVEYED BY: Crawford, Murphy, and Tilly, Inc. IL REGISTRATION #: 035-002214

DRILLING CONTRACTOR: Terra Drill DRILLER: J. Gates

CONSULTING FIRM: Clayton Group Services, Inc. GEOLOGIST: H. Mendygral

DRILLING METHOD: Hollow Stem Auger DRILLING FLUIDS (TYPE): None

LOGGED BY: H. Mendygral DATE STARTED: 11/29/04 DATE FINISHED: 11/29/04

REPORT FORM COMPLETED BY: M. Mueller DATE: 2/21/05

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: N/A

INSTALLATION METHOD: N/A

SETTING TIME: N/A

TYPE OF BENTONITE SEAL-

GRANULAR, PELLET, SLURRY, CHIPS (CIRCLE ONE)

INSTALLATION METHOD: Poured

SETTING TIME: ~24 hours

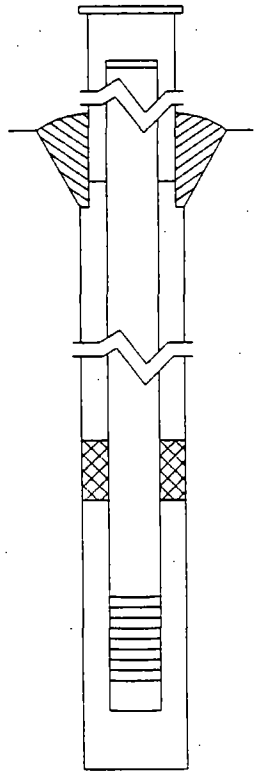
TYPE OF SAND PACK: Industrial Quartz

GRAIN SIZE: #01

INSTALLATION METHOD: Poured

TYPE OF BACKFILL MATERIAL: Not Applicable (IF APPLICABLE)

INSTALLATION METHOD: Not Applicable



ELEVATIONS (MSL) *	DEPTHS (BGS)	(.01 ft)
431.60	0	TOP OF PROTECTIVE CASING
431.36	0.24	TOP OF RISER PIPE
431.60	0	GROUND SURFACE
N/A	N/A	TOP OF ANNULAR SEALANT
--	--	STATIC WATER LEVEL (AFTER COMPLETION)
428.60	3.00	TOP OF SEAL
422.80	8.80	TOP OF SANDPACK
421.80	9.80	TOP OF SCREEN
414.70	16.90	BOTTOM OF SCREEN
414.60	17.00	BOTTOM OF WELL
414.60	17.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS

(CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER:	Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in.)	8.5
ID OF RISER PIPE (in)	1.0
PROTECTIVE CASING LENGTH (ft)	1.0
RISER PIPE LENGTH (ft)	9.56
BOTTOM OF SCREEN TO END CAP (ft)	0.10
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	7.10
TOTAL LENGTH OF CASING (ft)	16.76
SCREEN SLOT SIZE **	0.010"

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency Well Completion Report

SITE #: 1190505040 COUNTY: Madison WELL #: MP-69

SITE NAME: Village of Hartford, Illinois BOREHOLE #: MP-69

STATE PLANE COORDINATE: X 2316686.00 E Y 791425.49 N (or) LATITUDE: LONGITUDE:

SURVEYED BY: Crawford, Murphy, and Tilly, Inc. IL REGISTRATION #: 035-002214

DRILLING CONTRACTOR: Terra Drill DRILLER: J. Gates

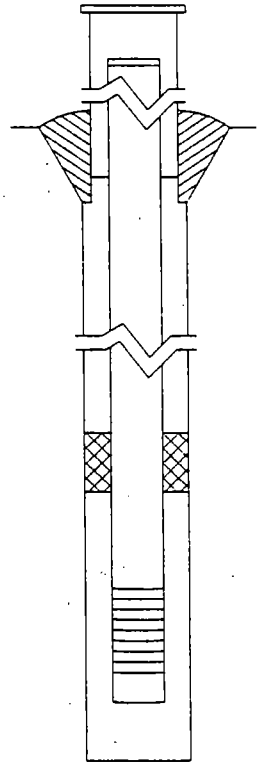
CONSULTING FIRM: Clayton Group Services, Inc. GEOLOGIST: H. Mendygral

DRILLING METHOD: Hollow Stem Auger DRILLING FLUIDS (TYPE): None

LOGGED BY: H. Mendygral DATE STARTED: 11/29/04 DATE FINISHED: 11/29/04

REPORT FORM COMPLETED BY: M. Mueller DATE: 2/21/05

ANNULAR SPACE DETAILS



TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: N/A

INSTALLATION METHOD: N/A

SETTING TIME: N/A

TYPE OF BENTONITE SEAL-

GRANULAR, PELLET, SLURRY, CHIPS (CIRCLE ONE)

INSTALLATION METHOD: Poured

SETTING TIME: ~ 24 hours

TYPE OF SAND PACK: Industrial Quartz

GRAIN SIZE: #01

INSTALLATION METHOD: Poured

TYPE OF BACKFILL MATERIAL: Not Applicable (IF APPLICABLE)

INSTALLATION METHOD: Not Applicable

ELEVATIONS (MSL) *	DEPTHS (BGS)	(.01 ft)
431.70	0	TOP OF PROTECTIVE CASING
431.57	0.13	TOP OF RISER PIPE
431.70	0	GROUND SURFACE
N/A	N/A	TOP OF ANNULAR SEALANT
--	--	STATIC WATER LEVEL (AFTER COMPLETION)
428.70	3.00	TOP OF SEAL
421.10	10.60	TOP OF SANDPACK
420.10	11.60	TOP OF SCREEN
415.30	16.40	BOTTOM OF SCREEN
415.20	16.50	BOTTOM OF WELL
414.20	17.50	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS

(CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER:	Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in.)	8.5
ID OF RISER PIPE (in)	1.0
PROTECTIVE CASING LENGTH (ft)	1.0
RISER PIPE LENGTH (ft)	11.47
BOTTOM OF SCREEN TO END CAP (ft)	0.10
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.80
TOTAL LENGTH OF CASING (ft)	16.37
SCREEN SLOT SIZE **	0.010"

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency Well Completion Report

SITE #: 1190505040 COUNTY: Madison WELL #: MP-70

SITE NAME: Village of Hartford, Illinois BOREHOLE #: MP-70

STATE PLANE COORDINATE: X 2316623.95 E Y 791483.76 N (or) LATITUDE: _____ LONGITUDE: _____

SURVEYED BY: Crawford, Murphy, and Tilly, Inc. IL REGISTRATION #: 035-002214

DRILLING CONTRACTOR: Terra Drill DRILLER: J. Gates

CONSULTING FIRM: Clayton Group Services, Inc. GEOLOGIST: H. Mendygral

DRILLING METHOD: Hollow Stem Auger DRILLING FLUIDS (TYPE): None

LOGGED BY: H. Mendygral DATE STARTED: 11/30/04 DATE FINISHED: 11/30/04

REPORT FORM COMPLETED BY: M. Mueller DATE: 2/21/05

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: N/A

INSTALLATION METHOD: N/A

SETTING TIME: N/A

TYPE OF BENTONITE SEAL-

GRANULAR, PELLET, SLURRY, CHIPS (CIRCLE ONE)

INSTALLATION METHOD: Poured

SETTING TIME: ~ 24 hours

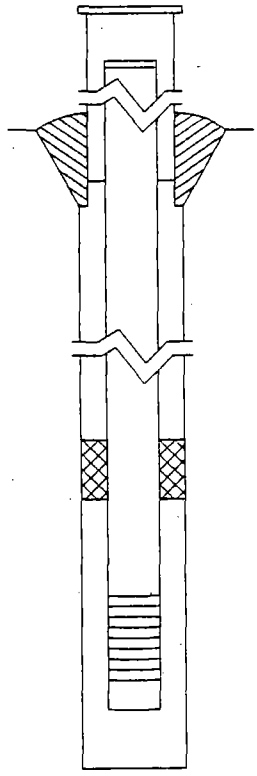
TYPE OF SAND PACK: Industrial Quartz

GRAIN SIZE: #01

INSTALLATION METHOD: Poured

TYPE OF BACKFILL MATERIAL: Not Applicable (IF APPLICABLE)

INSTALLATION METHOD: Not Applicable



ELEVATIONS (MSL) *	DEPTHS (BGS)	(.01 ft)
431.40	0	TOP OF PROTECTIVE CASING
431.00	0.40	TOP OF RISER PIPE
431.40	0	GROUND SURFACE
N/A	N/A	TOP OF ANNULAR SEALANT
415.55	15.85	STATIC WATER LEVEL (AFTER COMPLETION)
428.40	3.00	TOP OF SEAL
421.90	9.50	TOP OF SANDPACK
420.90	10.50	TOP OF SCREEN
415.00	16.40	BOTTOM OF SCREEN
414.90	16.50	BOTTOM OF WELL
414.40	17.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS

(CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER:	Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in.)	8.5
ID OF RISER PIPE (in)	1.0
PROTECTIVE CASING LENGTH (ft)	1.0
RISER PIPE LENGTH (ft)	10.10
BOTTOM OF SCREEN TO END CAP (ft)	0.10
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	5.90
TOTAL LENGTH OF CASING (ft)	16.10
SCREEN SLOT SIZE **	0.010"

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency Well Completion Report

SITE #: 1190505040 COUNTY: Madison WELL #: MP-71

SITE NAME: Village of Hartford, Illinois BOREHOLE #: MP-71

STATE PLANE COORDINATE: X 2316505.74 E Y 791568.76 N (or) LATITUDE: LONGITUDE:

SURVEYED BY: Crawford, Murphy, and Tilly, Inc. IL REGISTRATION #: 035-002214

DRILLING CONTRACTOR: Terra Drill DRILLER: J. Gates

CONSULTING FIRM: Clayton Group Services, Inc. GEOLOGIST: H. Mendygral

DRILLING METHOD: Hollow Stem Auger DRILLING FLUIDS (TYPE): None

LOGGED BY: H. Mendygral DATE STARTED: 11/30/04 DATE FINISHED: 11/30/04

REPORT FORM COMPLETED BY: M. Mueller DATE: 2/21/05

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: N/A

INSTALLATION METHOD: N/A

SETTING TIME: N/A

TYPE OF BENTONITE SEAL-

GRANULAR, PELLET, SLURRY, CHIPS (CIRCLE ONE)

INSTALLATION METHOD: Poured

SETTING TIME: ~ 24 hours

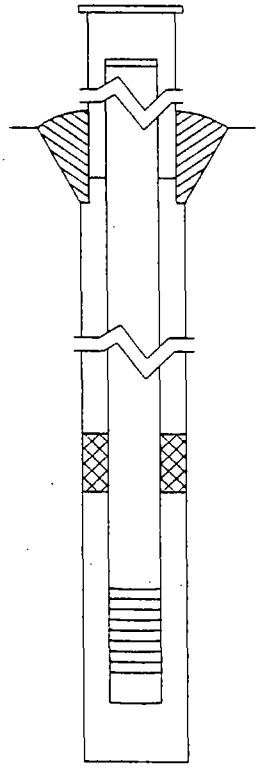
TYPE OF SAND PACK: Industrial Quartz

GRAIN SIZE: #01

INSTALLATION METHOD: Poured

TYPE OF BACKFILL MATERIAL: Not Applicable (IF APPLICABLE)

INSTALLATION METHOD: Not Applicable



ELEVATIONS (MSL) *	DEPTHS (BGS) (.01 ft)	
430.30	0	TOP OF PROTECTIVE CASING
430.14	0.16	TOP OF RISER PIPE
430.30	0	GROUND SURFACE
N/A	N/A	TOP OF ANNULAR SEALANT
415.71	14.59	STATIC WATER LEVEL (AFTER COMPLETION)
427.30	3.00	TOP OF SEAL
418.60	11.70	TOP OF SANDPACK
417.60	12.70	TOP OF SCREEN
414.50	15.80	BOTTOM OF SCREEN
414.30	16.00	BOTTOM OF WELL
413.30	17.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS

(CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER:	Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in.)	8.5
ID OF RISER PIPE (In)	1.0
PROTECTIVE CASING LENGTH (ft)	1.0
RISER PIPE LENGTH (ft)	12.54
BOTTOM OF SCREEN TO END CAP (ft)	0.20
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	3.10
TOTAL LENGTH OF CASING (ft)	15.84
SCREEN SLOT SIZE **	0.010"

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency Well Completion Report

SITE #: 1190505040 COUNTY: Madison WELL #: MP-72

SITE NAME: Village of Hartford, Illinois BOREHOLE #: MP-72

STATE PLANE COORDINATE: X 2316565.29 E Y 791584.88 N (or) LATITUDE: _____ LONGITUDE: _____

SURVEYED BY: Crawford, Murphy, and Tilly, Inc. IL REGISTRATION #: 035-002214

DRILLING CONTRACTOR: Terra Drill DRILLER: J. Gates

CONSULTING FIRM: Clayton Group Services, Inc. GEOLOGIST: H. Mendygral

DRILLING METHOD: Hollow Stem Auger DRILLING FLUIDS (TYPE): None

LOGGED BY: H. Mendygral DATE STARTED: 11/30/04 DATE FINISHED: 11/30/04

REPORT FORM COMPLETED BY: M. Mueller DATE: 2/21/05

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: N/A

INSTALLATION METHOD: N/A

SETTING TIME: N/A

TYPE OF BENTONITE SEAL-

GRANULAR, PELLET, SLURRY, CHIPS (CIRCLE ONE)

INSTALLATION METHOD: Poured

SETTING TIME: ~ 24 hours

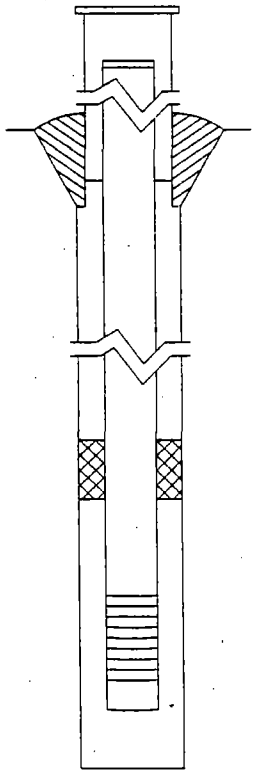
TYPE OF SAND PACK: Industrial Quartz

GRAIN SIZE: #01

INSTALLATION METHOD: Poured

TYPE OF BACKFILL MATERIAL: Not Applicable (IF APPLICABLE)

INSTALLATION METHOD: Not Applicable



ELEVATIONS (MSL) *	DEPTHS (BGS)	(.01 ft)
430.80	0	TOP OF PROTECTIVE CASING
430.51	0.29	TOP OF RISER PIPE
430.80	0	GROUND SURFACE
N/A	N/A	TOP OF ANNULAR SEALANT
415.13	15.67	STATIC WATER LEVEL (AFTER COMPLETION)
427.80	3.00	TOP OF SEAL
420.20	10.60	TOP OF SANDPACK
419.20	11.60	TOP OF SCREEN
415.00	15.80	BOTTOM OF SCREEN
414.80	16.00	BOTTOM OF WELL
414.80	16.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS

(CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER:	Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in.)	8.5
ID OF RISER PIPE (in)	1.0
PROTECTIVE CASING LENGTH (ft)	1.0
RISER PIPE LENGTH (ft)	11.31
BOTTOM OF SCREEN TO END CAP (ft)	0.20
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	4.20
TOTAL LENGTH OF CASING (ft)	15.71
SCREEN SLOT SIZE **	0.010"

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency Well Completion Report

SITE #: 1190505040 COUNTY: Madison WELL #: MP-73

SITE NAME: Village of Hartford, Illinois BOREHOLE #: MP-73

STATE PLANE COORDINATE: X 2316662.38 E Y 791586.05 N (or) LATITUDE: LONGITUDE:

SURVEYED BY: Crawford, Murphy, and Tilly, Inc. IL REGISTRATION #: 035-002214

DRILLING CONTRACTOR: Terra Drill DRILLER: J. Gates

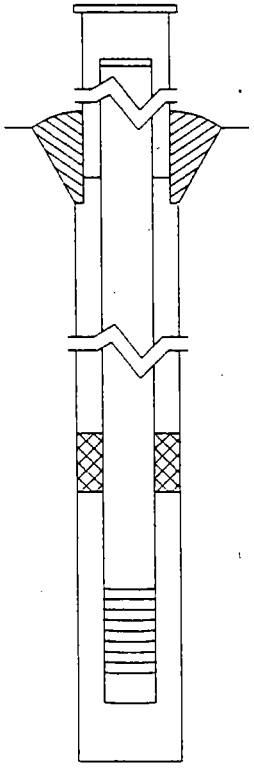
CONSULTING FIRM: Clayton Group Services, Inc. GEOLOGIST: S. Peterson

DRILLING METHOD: Hollow Stem Auger DRILLING FLUIDS (TYPE): None

LOGGED BY: S. Peterson DATE STARTED: 12/08/04 DATE FINISHED: 12/08/04

REPORT FORM COMPLETED BY: M. Mueller DATE: 2/21/05

ANNULAR SPACE DETAILS



TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: N/A

INSTALLATION METHOD: N/A

SETTING TIME: N/A

TYPE OF BENTONITE SEAL-

GRANULAR, PELLET, SLURRY, CHIPS (CIRCLE ONE)

INSTALLATION METHOD: Poured

SETTING TIME: ~ 24 hours

TYPE OF SAND PACK: Industrial Quartz

GRAIN SIZE: #01

INSTALLATION METHOD: Poured

TYPE OF BACKFILL MATERIAL: Not Applicable (IF APPLICABLE)

INSTALLATION METHOD: Not Applicable

ELEVATIONS (MSL) *	DEPTHS (BGS)	(.01 ft)
431.10	0	TOP OF PROTECTIVE CASING
430.96	0.14	TOP OF RISER PIPE
431.10	0	GROUND SURFACE
N/A	N/A	TOP OF ANNULAR SEALANT
414.63	16.47	STATIC WATER LEVEL (AFTER COMPLETION)
428.10	3.00	TOP OF SEAL
423.40	7.70	TOP OF SANDPACK
422.40	8.70	TOP OF SCREEN
414.25	16.85	BOTTOM OF SCREEN
414.10	17.00	BOTTOM OF WELL
414.10	17.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS

(CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER:	Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in.)	8.5
ID OF RISER PIPE (In)	1.0
PROTECTIVE CASING LENGTH (ft)	1.0
RISER PIPE LENGTH (ft)	8.56
BOTTOM OF SCREEN TO END CAP (ft)	0.15
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	8.15
TOTAL LENGTH OF CASING (ft)	16.86
SCREEN SLOT SIZE **	0.010"

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency Well Completion Report

SITE #: 1190505040 COUNTY: Madison WELL #: MP-74

SITE NAME: Village of Hartford, Illinois BOREHOLE #: MP-74

STATE PLANE COORDINATE: X 2316718.98 E Y 791569.46 N (or) LATITUDE: _____ LONGITUDE: _____

SURVEYED BY: Crawford, Murphy, and Tilly, Inc. IL REGISTRATION #: 035-002214

DRILLING CONTRACTOR: Terra Drill DRILLER: J. Gates

CONSULTING FIRM: Clayton Group Services, Inc. GEOLOGIST: S. Peterson

DRILLING METHOD: Hollow Stem Auger DRILLING FLUIDS (TYPE): None

LOGGED BY: S, Peterson DATE STARTED: 12/08/04 DATE FINISHED: 12/08/04

REPORT FORM COMPLETED BY: M. Mueller DATE: 2/21/05

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: N/A

INSTALLATION METHOD: N/A

SETTING TIME: N/A

TYPE OF BENTONITE SEAL-

GRANULAR, PELLET, SLURRY, CHIPS (CIRCLE ONE)

INSTALLATION METHOD: Poured

SETTING TIME: ~ 24 hours

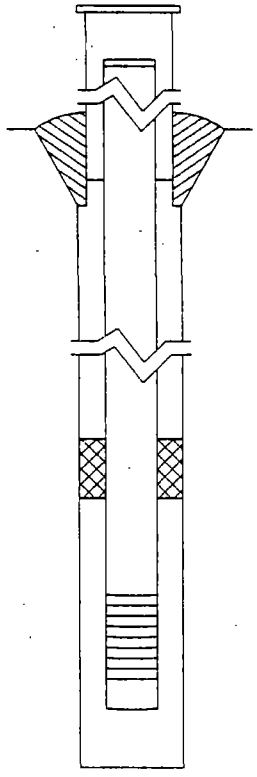
TYPE OF SAND PACK: Industrial Quartz

GRAIN SIZE: #01

INSTALLATION METHOD: Poured

TYPE OF BACKFILL MATERIAL: Not Applicable (IF APPLICABLE)

INSTALLATION METHOD: Not Applicable



ELEVATIONS (MSL) *	DEPTHS (BGS)	(.01 ft)
431.60	0	TOP OF PROTECTIVE CASING
431.38	0.22	TOP OF RISER PIPE
431.60	0	GROUND SURFACE
N/A	N/A	TOP OF ANNULAR SEALANT
414.16	17.44	STATIC WATER LEVEL (AFTER COMPLETION)
428.60	3.00	TOP OF SEAL
421.80	9.80	TOP OF SANDPACK
420.75	10.85	TOP OF SCREEN
413.75	17.85	BOTTOM OF SCREEN
413.60	18.00	BOTTOM OF WELL
413.60	18.00	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS

(CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER:	Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in.)	8.5
ID OF RISER PIPE (in)	1.0
PROTECTIVE CASING LENGTH (ft)	1.0
RISER PIPE LENGTH (ft)	10.63
BOTTOM OF SCREEN TO END CAP (ft)	0.15
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	7.00
TOTAL LENGTH OF CASING (ft)	17.78
SCREEN SLOT SIZE **	0.010"

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency Well Completion Report

SITE #: 1190505040 COUNTY: Madison WELL #: MP-75

SITE NAME: Village of Hartford, Illinois BOREHOLE #: MP-75

STATE PLANE COORDINATE: X 2316753.09 E Y 791614.17 N (or) LATITUDE: LONGITUDE:

SURVEYED BY: Crawford, Murphy, and Tilly, Inc. IL REGISTRATION #: 035-002214

DRILLING CONTRACTOR: Terra Drill DRILLER: J. Gates

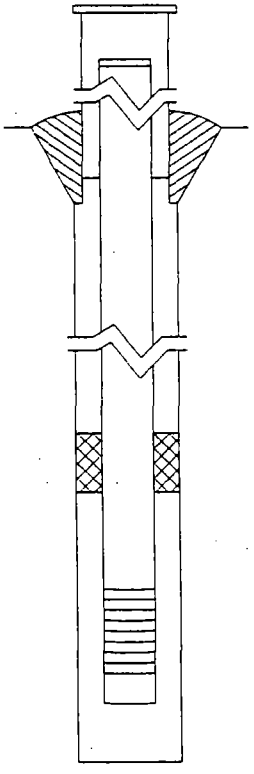
CONSULTING FIRM: Clayton Group Services, Inc. GEOLOGIST: S. Peterson

DRILLING METHOD: Hollow Stem Auger DRILLING FLUIDS (TYPE): None

LOGGED BY: S. Peterson DATE STARTED: 12/09/04 DATE FINISHED: 12/09/04

REPORT FORM COMPLETED BY: M. Mueller DATE: 2/21/05

ANNULAR SPACE DETAILS



TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: N/A

INSTALLATION METHOD: N/A

SETTING TIME: N/A

TYPE OF BENTONITE SEAL-

GRANULAR, PELLET, SLURRY, CHIPS (CIRCLE ONE)

INSTALLATION METHOD: Poured

SETTING TIME: ~ 24 hours

TYPE OF SAND PACK: Industrial Quartz

GRAIN SIZE: #01

INSTALLATION METHOD: Poured

TYPE OF BACKFILL MATERIAL: Not Applicable (IF APPLICABLE)

INSTALLATION METHOD: Not Applicable

ELEVATIONS (MSL) *	DEPTHS (BGS)	(.01 ft)
430.80	0	TOP OF PROTECTIVE CASING
430.66	0.14	TOP OF RISER PIPE
430.80	0	GROUND SURFACE
N/A	N/A	TOP OF ANNULAR SEALANT
414.46	16.34	STATIC WATER LEVEL (AFTER COMPLETION)
427.80	3.00	TOP OF SEAL
420.30	10.50	TOP OF SANDPACK
419.30	11.50	TOP OF SCREEN
412.45	18.35	BOTTOM OF SCREEN
412.30	18.50	BOTTOM OF WELL
412.30	18.50	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS

(CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER:	Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in.)	8.5
ID OF RISER PIPE (in)	1.0
PROTECTIVE CASING LENGTH (ft)	1.0
RISER PIPE LENGTH (ft)	11.36
BOTTOM OF SCREEN TO END CAP (ft)	0.15
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	6.85
TOTAL LENGTH OF CASING (ft)	18.36
SCREEN SLOT SIZE **	0.010"

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

Illinois Environmental Protection Agency Well Completion Report

SITE #: 1190505040 COUNTY: Madison WELL #: MP-76

SITE NAME: Village of Hartford, Illinois BOREHOLE #: MP-76

STATE PLANE COORDINATE: X 2316776.87 E Y 791580.93 N (or) LATITUDE: _____ LONGITUDE: _____

SURVEYED BY: Crawford, Murphy, and Tilly, Inc. IL REGISTRATION #: 035-002214

DRILLING CONTRACTOR: Terra Drill DRILLER: J. Gates

CONSULTING FIRM: Clayton Group Services, Inc. GEOLOGIST: S. Peterson

DRILLING METHOD: Hollow Stem Auger DRILLING FLUIDS (TYPE): None

LOGGED BY: S. Peterson DATE STARTED: 12/09/04 DATE FINISHED: 12/09/04

REPORT FORM COMPLETED BY: M. Mueller DATE: 2/21/05

ANNULAR SPACE DETAILS

TYPE OF SURFACE SEAL: Concrete

TYPE OF ANNULAR SEALANT: N/A

INSTALLATION METHOD: N/A

SETTING TIME: N/A

TYPE OF BENTONITE SEAL-

GRANULAR, PELLET, SLURRY, CHIPS (CIRCLE ONE)

INSTALLATION METHOD: Poured

SETTING TIME: ~ 24 hours

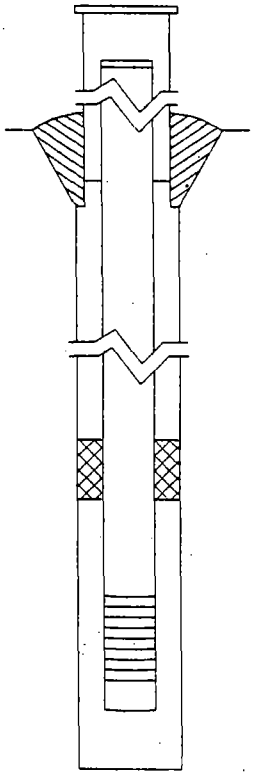
TYPE OF SAND PACK: Industrial Quartz

GRAIN SIZE: #01

INSTALLATION METHOD: Poured

TYPE OF BACKFILL MATERIAL: Not Applicable (IF APPLICABLE)

INSTALLATION METHOD: Not Applicable



ELEVATIONS (MSL) *	DEPTHS (BGS) (.01 ft)	
430.90	0	TOP OF PROTECTIVE CASING
430.75	0.15	TOP OF RISER PIPE
430.90	0	GROUND SURFACE
N/A	N/A	TOP OF ANNULAR SEALANT
414.07	16.83	STATIC WATER LEVEL (AFTER COMPLETION)
427.90	3.00	TOP OF SEAL
421.40	9.50	TOP OF SANDPACK
420.40	10.50	TOP OF SCREEN
413.55	17.35	BOTTOM OF SCREEN
413.40	17.50	BOTTOM OF WELL
413.40	17.50	BOTTOM OF BOREHOLE

* REFERENCED TO A NATIONAL GEODETIC VERTICAL DATUM

WELL CONSTRUCTION MATERIALS

(CIRCLE ONE)

PROTECTIVE CASING	SS304, SS316, PTFE, PVC OR OTHER:	Steel
RISER PIPE ABOVE W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
RISER PIPE BELOW W.T.	SS304, SS316, PTFE, PVC OR OTHER:	
SCREEN	SS304, SS316, PTFE, PVC OR OTHER:	

CASING MEASUREMENTS

DIAMETER OF BOREHOLE (in.)	8.5
ID OF RISER PIPE (In)	1.0
PROTECTIVE CASING LENGTH (ft)	1.0
RISER PIPE LENGTH (ft)	10.35
BOTTOM OF SCREEN TO END CAP (ft)	0.15
SCREEN LENGTH (1st SLOT TO LAST SLOT) (ft)	6.85
TOTAL LENGTH OF CASING (ft)	17.35
SCREEN SLOT SIZE **	0.010"

** HAND-SLOTTED WELL SCREENS ARE UNACCEPTABLE

APPENDIX C

BLOWER PERFORMANCE SPECIFICATIONS

Company: H2K Technologies, Inc.
Address:
763-746-9900, Fax: 763-746-9903
Contact: GH

ROOTS BLOWER PERFORMANCE SUMMARY: (01/04/2005)

AMBIENT CONDITIONS:

Gas	AIR		
Relative Humidity	80%		
Molecular Wt.	28.646		
k-Value	1.393		
Specific Gravity	.989		
Ambient Temp.	68	deg F	
Ambient Pressure	14.22	PSIA	
Elevation	900	feet	

INPUT CONDITIONS:

Actual Volume	410	ICFM	+/-5 %
Std. Volume	251	SCFM	
Mass/Wt. Flow	20	#/min	+/-5 %
System Inlet Pressure	125	in H2O Vac	
Inlet Pr. Loss	0.6	PSI	
Blower Inlet Pressure	9.11	PSIA	
System Disch Pressure	14.22	PSIA	
Disch Pr. Loss	0.3	PSI	
Blower Disch Pressure	14.52	PSIA	
Inlet Temperature	68	deg F	

STANDARD CONDITIONS:

Pressure	14.7	PSIA	
Temperature	68	deg F	
Relative Humidity	36	%	

SELECTED UNIT DETAIL:

Model	59	URAI	
Speed	1631	RPM	57%
Power at Blower Shaft	12.7	BHP +/-	4%
Blower Differential Pressure	5.41	PSI	77%
Temperature Rise	110	deg F	49%
Discharge Temperature	178	deg F	
Discharge Volume	310	ACFM	
Gear Tip Speed	2137	FPM	
V-Belt: Est. B10 Brg Life:	230608	hours	
Coupling: Est. B10 Brg Life:	230608	hours	
Est. Free Field Noise @ 1 m.	82.5	dBa	
CFR	0.323		
Weight	204	lbs.	
Shaft Dia.	1.125	in.	
Min. Sheave Dia.	6	in.	
Inlet/Disch Conn.	4T		

APPENDIX D

LABORATORY REPORTS

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-IF46

ID#: 0502057B-21A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022010	Date of Collection:	2/1/05
Dil. Factor:	186000	Date of Analysis:	2/20/05 06:50 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	93000	330000	300000	1000000
Ethyl Benzene	93000	Not Detected	400000	Not Detected
Styrene	93000	Not Detected	400000	Not Detected
Toluene	93000	Not Detected	350000	Not Detected
1,2,4-Trimethylbenzene	93000	Not Detected	460000	Not Detected
1,3,5-Trimethylbenzene	93000	Not Detected	460000	Not Detected
m,p-Xylene	93000	Not Detected	400000	Not Detected
o-Xylene	93000	Not Detected	400000	Not Detected
Cyclohexane	370000	Not Detected	1300000	Not Detected
Cyclopentane	370000	480000	1100000	1400000
2,2-Dimethylbutane	370000	Not Detected	1300000	Not Detected
2,3-Dimethylbutane	370000	1100000	1300000	3800000
2,3-Dimethylpentane	370000	780000	1500000	3200000
2,4-Dimethylpentane	370000	510000	1500000	2100000
Heptane	370000	Not Detected	1500000	Not Detected
Hexane	370000	1700000	1300000	6000000
Isoprene	370000	Not Detected	1000000	Not Detected
Cumene	370000	Not Detected	1800000	Not Detected
Isopentane	370000	26000000	1100000	76000000
Methylcyclohexane	370000	Not Detected	1500000	Not Detected
Methylcyclopentane	370000	1000000	1300000	3500000
2-Methylheptane	370000	Not Detected	1700000	Not Detected
3-Methylheptane	370000	Not Detected	1700000	Not Detected
2-Methylhexane	370000	480000	1500000	2000000
3-Methylhexane	370000	550000	1500000	2300000
2-Methylpentane	370000	4200000	1300000	15000000
3-Methylpentane	370000	2200000	1300000	7900000
Nonane	370000	Not Detected	2000000	Not Detected
Octane	370000	Not Detected	1700000	Not Detected
Pentane	370000	10000000	1100000	29000000
1-Pentene	370000	Not Detected	1100000	Not Detected
cis-2-Pentene	370000	Not Detected	1100000	Not Detected
trans-2-Pentene	370000	Not Detected	1100000	Not Detected
Propylbenzene	370000	Not Detected	1800000	Not Detected
2,2,4-Trimethylpentane	370000	600000	1700000	2800000
2,3,4-Trimethylpentane	370000	Not Detected	1700000	Not Detected
1-Hexene	370000	Not Detected	1300000	Not Detected
3-Ethyltoluene	370000	Not Detected	1800000	Not Detected
4-Ethyltoluene	370000	Not Detected	1800000	Not Detected
2-Ethyltoluene	370000	Not Detected	1800000	Not Detected
Decane	370000	Not Detected	2200000	Not Detected
1,2,3-Trimethylbenzene	370000	Not Detected	1800000	Not Detected

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-IF46

ID#: 0502057B-21A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022010	Date of Collection:	2/1/05
Dil. Factor:	186000	Date of Analysis:	2/20/05 06:50 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Diethylbenzene	370000	Not Detected	2000000	Not Detected
1,4-Diethylbenzene	370000	Not Detected	2000000	Not Detected
Undecane	370000	Not Detected	2400000	Not Detected
cis-2-Hexene	930000	Not Detected	3200000	Not Detected
trans-2-Hexene	930000	Not Detected	3200000	Not Detected
alpha-Pinene	930000	Not Detected	5200000	Not Detected
beta-Pinene	930000	Not Detected	5200000	Not Detected
Cyclopentene	370000	Not Detected	1000000	Not Detected
1-Undecene	930000	Not Detected	5800000	Not Detected
1-Decene	930000	Not Detected	5300000	Not Detected
1-Nonene	370000	Not Detected	1900000	Not Detected
1-Octene	370000	Not Detected	1700000	Not Detected
1-Heptene	370000	Not Detected	1500000	Not Detected
1,3-Butadiene	93000	Not Detected	200000	Not Detected
TPH ref. to Gasoline (MW=100)	1900000	43000000	7600000	180000000

TENTATIVELY IDENTIFIED COMPOUNDS

Compound	CAS Number	Match Quality	Amount ppbv
Dodecane	112-40-3	NA	Not Detected
1-Dodecene	112-41-4	NA	Not Detected
Tridecane	629-50-5	NA	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	116	70-130

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-EF46

ID#: 0502057B-22A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022014	Date of Collection:	2/1/05
Dil. Factor:	6700	Date of Analysis:	2/20/05 10:38 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	3400	12000	11000	38000
Ethyl Benzene	3400	Not Detected	14000	Not Detected
Styrene	3400	Not Detected	14000	Not Detected
Toluene	3400	Not Detected	13000	Not Detected
1,2,4-Trimethylbenzene	3400	Not Detected	16000	Not Detected
1,3,5-Trimethylbenzene	3400	Not Detected	16000	Not Detected
m,p-Xylene	3400	Not Detected	14000	Not Detected
o-Xylene	3400	Not Detected	14000	Not Detected
Cyclohexane	13000	Not Detected	46000	Not Detected
Cyclopentane	13000	14000	38000	40000
2,2-Dimethylbutane	13000	Not Detected	47000	Not Detected
2,3-Dimethylbutane	13000	33000	47000	120000
2,3-Dimethylpentane	13000	23000	55000	94000
2,4-Dimethylpentane	13000	15000	55000	62000
Heptane	13000	Not Detected	55000	Not Detected
Hexane	13000	52000	47000	180000
Isoprene	13000	Not Detected	37000	Not Detected
Cumene	13000	Not Detected	66000	Not Detected
Isopentane	13000	780000	40000	2300000
Methylcyclohexane	13000	Not Detected	54000	Not Detected
Methylcyclopentane	13000	30000	46000	100000
2-Methylheptane	13000	Not Detected	63000	Not Detected
3-Methylheptane	13000	Not Detected	62000	Not Detected
2-Methylhexane	13000	17000	55000	70000
3-Methylhexane	13000	16000	55000	68000
2-Methylpentane	13000	130000	47000	450000
3-Methylpentane	13000	68000	47000	240000
Nonane	13000	Not Detected	70000	Not Detected
Octane	13000	Not Detected	62000	Not Detected
Pentane	13000	300000	40000	900000
1-Pentene	13000	Not Detected	38000	Not Detected
cis-2-Pentene	13000	Not Detected	38000	Not Detected
trans-2-Pentene	13000	Not Detected	38000	Not Detected
Propylbenzene	13000	Not Detected	66000	Not Detected
2,2,4-Trimethylpentane	13000	18000	62000	86000
2,3,4-Trimethylpentane	13000	Not Detected	63000	Not Detected
1-Hexene	13000	Not Detected	46000	Not Detected
3-Ethyltoluene	13000	Not Detected	66000	Not Detected
4-Ethyltoluene	13000	Not Detected	66000	Not Detected
2-Ethyltoluene	13000	Not Detected	66000	Not Detected
Decane	13000	Not Detected	78000	Not Detected
1,2,3-Trimethylbenzene	13000	Not Detected	66000	Not Detected

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-EF46

ID#: 0502057B-22A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022014	Date of Collection:	2/1/05
Dil. Factor:	6700	Date of Analysis:	2/20/05 10:38 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Diethylbenzene	13000	Not Detected	73000	Not Detected
1,4-Diethylbenzene	13000	Not Detected	74000	Not Detected
Undecane	13000	Not Detected	86000	Not Detected
cis-2-Hexene	34000	Not Detected	120000	Not Detected
trans-2-Hexene	34000	Not Detected	120000	Not Detected
alpha-Pinene	34000	Not Detected	190000	Not Detected
beta-Pinene	34000	Not Detected	190000	Not Detected
Cyclopentene	13000	Not Detected	37000	Not Detected
1-Undecene	34000	Not Detected	210000	Not Detected
1-Decene	34000	Not Detected	190000	Not Detected
1-Nonene	13000	Not Detected	69000	Not Detected
1-Octene	13000	Not Detected	62000	Not Detected
1-Heptene	13000	Not Detected	54000	Not Detected
1,3-Butadiene	3400	Not Detected	7400	Not Detected
TPH ref. to Gasoline (MW=100)	67000	1200000	270000	4900000

TENTATIVELY IDENTIFIED COMPOUNDS

Compound	CAS Number	Match Quality	Amount ppbv
Dodecane	112-40-3	NA	Not Detected
1-Dodecene	112-41-4	NA	Not Detected
Tridecane	629-50-5	NA	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	113	70-130

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-IF73

ID#: 0502057B-23A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022013	Date of Collection: 2/1/05
Dil. Factor:	219000	Date of Analysis: 2/20/05 09:49 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	110000	410000	350000	1300000
Ethyl Benzene	110000	Not Detected	480000	Not Detected
Styrene	110000	Not Detected	470000	Not Detected
Toluene	110000	Not Detected	410000	Not Detected
1,2,4-Trimethylbenzene	110000	Not Detected	540000	Not Detected
1,3,5-Trimethylbenzene	110000	Not Detected	540000	Not Detected
m,p-Xylene	110000	Not Detected	480000	Not Detected
o-Xylene	110000	Not Detected	480000	Not Detected
Cyclohexane	440000	Not Detected	1500000	Not Detected
Cyclopentane	440000	570000	1200000	1600000
2,2-Dimethylbutane	440000	Not Detected	1500000	Not Detected
2,3-Dimethylbutane	440000	1300000	1500000	4700000
2,3-Dimethylpentane	440000	900000	1800000	3700000
2,4-Dimethylpentane	440000	640000	1800000	2600000
Heptane	440000	Not Detected	1800000	Not Detected
Hexane	440000	2000000	1500000	7200000
Isoprene	440000	Not Detected	1200000	Not Detected
Cumene	440000	Not Detected	2200000	Not Detected
Isopentane	440000	31000000	1300000	92000000
Methylcyclohexane	440000	Not Detected	1800000	Not Detected
Methylcyclopentane	440000	1200000	1500000	4100000
2-Methylheptane	440000	Not Detected	2000000	Not Detected
3-Methylheptane	440000	Not Detected	2000000	Not Detected
2-Methylhexane	440000	620000	1800000	2500000
3-Methylhexane	440000	660000	1800000	2700000
2-Methylpentane	440000	4900000	1500000	17000000
3-Methylpentane	440000	2700000	1500000	9600000
Nonane	440000	Not Detected	2300000	Not Detected
Octane	440000	Not Detected	2000000	Not Detected
Pentane	440000	12000000	1300000	35000000
1-Pentene	440000	Not Detected	1200000	Not Detected
cis-2-Pentene	440000	Not Detected	1200000	Not Detected
trans-2-Pentene	440000	Not Detected	1200000	Not Detected
Propylbenzene	440000	Not Detected	2200000	Not Detected
2,2,4-Trimethylpentane	440000	730000	2000000	3400000
2,3,4-Trimethylpentane	440000	Not Detected	2000000	Not Detected
1-Hexene	440000	Not Detected	1500000	Not Detected
3-Ethyltoluene	440000	Not Detected	2200000	Not Detected
4-Ethyltoluene	440000	Not Detected	2200000	Not Detected
2-Ethyltoluene	440000	Not Detected	2200000	Not Detected
Decane	440000	Not Detected	2500000	Not Detected
1,2,3-Trimethylbenzene	440000	Not Detected	2200000	Not Detected

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-IF73

ID#: 0502057B-23A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022013	Date of Collection:	2/1/05
Dil. Factor:	219000	Date of Analysis:	2/20/05 09:49 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Diethylbenzene	440000	Not Detected	2400000	Not Detected
1,4-Diethylbenzene	440000	Not Detected	2400000	Not Detected
Undecane	440000	Not Detected	2800000	Not Detected
cis-2-Hexene	1100000	Not Detected	3800000	Not Detected
trans-2-Hexene	1100000	Not Detected	3800000	Not Detected
alpha-Pinene	1100000	Not Detected	6100000	Not Detected
beta-Pinene	1100000	Not Detected	6100000	Not Detected
Cyclopentene	440000	Not Detected	1200000	Not Detected
1-Undecene	1100000	Not Detected	6900000	Not Detected
1-Decene	1100000	Not Detected	6300000	Not Detected
1-Nonene	440000	Not Detected	2300000	Not Detected
1-Octene	440000	Not Detected	2000000	Not Detected
1-Heptene	440000	Not Detected	1800000	Not Detected
1,3-Butadiene	110000	Not Detected	240000	Not Detected
TPH ref. to Gasoline (MW=100)	2200000	49000000	9000000	200000000

TENTATIVELY IDENTIFIED COMPOUNDS

Compound	CAS Number	Match Quality	Amount ppbv
Dodecane	112-40-3	NA	Not Detected
1-Dodecene	112-41-4	NA	Not Detected
Tridecane	629-50-5	NA	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	115	70-130

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-EF73

ID#: 0502057B-24A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022207	Date of Collection: 2/1/05
Dil. Factor:	9730	Date of Analysis: 2/22/05 10:51 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	4900	20000	16000	64000
Ethyl Benzene	4900	Not Detected	21000	Not Detected
Styrene	4900	Not Detected	21000	Not Detected
Toluene	4900	Not Detected	18000	Not Detected
1,2,4-Trimethylbenzene	4900	Not Detected	24000	Not Detected
1,3,5-Trimethylbenzene	4900	Not Detected	24000	Not Detected
m,p-Xylene	4900	Not Detected	21000	Not Detected
o-Xylene	4900	Not Detected	21000	Not Detected
Cyclohexane	19000	Not Detected	67000	Not Detected
Cyclopentane	19000	28000	56000	82000
2,2-Dimethylbutane	19000	Not Detected	68000	Not Detected
2,3-Dimethylbutane	19000	73000	68000	260000
2,3-Dimethylpentane	19000	58000	80000	240000
2,4-Dimethylpentane	19000	38000	80000	150000
Heptane	19000	Not Detected	80000	Not Detected
Hexane	19000	100000	68000	360000
Isoprene	19000	Not Detected	54000	Not Detected
Cumene	19000	Not Detected	96000	Not Detected
Isopentane	19000	1400000	57000	4100000
Methylcyclohexane	19000	Not Detected	78000	Not Detected
Methylcyclopentane	19000	69000	67000	240000
2-Methylheptane	19000	Not Detected	91000	Not Detected
3-Methylheptane	19000	Not Detected	91000	Not Detected
2-Methylhexane	19000	33000	80000	140000
3-Methylhexane	19000	37000	80000	150000
2-Methylpentane	19000	250000	68000	890000
3-Methylpentane	19000	150000	68000	530000
Nonane	19000	Not Detected	100000	Not Detected
Octane	19000	Not Detected	91000	Not Detected
Pentane	19000	530000	57000	1600000
1-Pentene	19000	Not Detected	56000	Not Detected
cis-2-Pentene	19000	Not Detected	56000	Not Detected
trans-2-Pentene	19000	Not Detected	56000	Not Detected
Propylbenzene	19000	Not Detected	96000	Not Detected
2,2,4-Trimethylpentane	19000	48000	91000	220000
2,3,4-Trimethylpentane	19000	Not Detected	91000	Not Detected
1-Hexene	19000	Not Detected	67000	Not Detected
3-Ethyltoluene	19000	Not Detected	96000	Not Detected
4-Ethyltoluene	19000	Not Detected	96000	Not Detected
2-Ethyltoluene	19000	Not Detected	96000	Not Detected
Decane	19000	Not Detected	110000	Not Detected
1,2,3-Trimethylbenzene	19000	Not Detected	96000	Not Detected

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-EF73

ID#: 0502057B-24A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022207	Date of Collection: 2/1/05
Dil Factor:	9730	Date of Analysis: 2/22/05 10:51 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Diethylbenzene	19000	Not Detected	110000	Not Detected
1,4-Diethylbenzene	19000	Not Detected	110000	Not Detected
Undecane	19000	Not Detected	120000	Not Detected
cis-2-Hexene	49000	Not Detected	170000	Not Detected
trans-2-Hexene	49000	Not Detected	170000	Not Detected
alpha-Pinene	49000	Not Detected	270000	Not Detected
beta-Pinene	49000	Not Detected	270000	Not Detected
Cyclopentene	19000	Not Detected	54000	Not Detected
1-Undecene	49000	Not Detected	310000	Not Detected
1-Decene	49000	Not Detected	280000	Not Detected
1-Nonene	19000	Not Detected	100000	Not Detected
1-Octene	19000	Not Detected	89000	Not Detected
1-Heptene	19000	Not Detected	78000	Not Detected
1,3-Butadiene	4900	Not Detected	11000	Not Detected
TPH ref. to Gasoline (MW=100)	97000	2400000	400000	9800000

TENTATIVELY IDENTIFIED COMPOUNDS

Compound	CAS Number	Match Quality	Amount ppbv
Dodecane	112-40-3	NA	Not Detected
1-Dodecene	112-41-4	NA	Not Detected
Tridecane	629-50-5	NA	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	94	70-130
Toluene-d8	95	70-130
4-Bromofluorobenzene	111	70-130

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-IF46

ID#: 0502057D-21A

MODIFIED TO-14A

File Name:	e021006b	Date of Collection:	2/1/05
Dil. Factor:	1750	Date of Analysis:	2/10/05 02:13 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Isobutane	3500	4400000	8300	10000000
Butane	8800	16000000	21000	38000000
trans-2-butene	3500	62000	8000	140000
1-Butene	3500	Not Detected	8000	Not Detected
cis-2-Butene	3500	20000	8000	46000
Acetylene	8800	Not Detected	9300	Not Detected
Ethene	8800	Not Detected	10000	Not Detected
Propane	8800	100000	16000	180000
Ethane	8800	140000	11000	170000
Propylene	8800	Not Detected	15000	Not Detected

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-EF46

ID#: 0502057D-22A

MODIFIED TO-14A

File Name:	e021007b	Date of Collection:	2/1/05
Dil. Factor:	44.7	Date of Analysis:	2/10/05 02:42 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Isobutane	89	140000	210	320000
Butane	220	500000	530	1200000
trans-2-butene	89	1900	200	4400
1-Butene	89	Not Detected	200	Not Detected
cis-2-Butene	89	620	200	1400
Acetylene	220	Not Detected	240	Not Detected
Ethene	220	Not Detected	260	Not Detected
Propane	220	3000	400	5400
Ethane	220	4000	270	4800
Propylene	220	Not Detected	380	Not Detected

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-IF73

ID#: 0502057D-23A

MODIFIED TO-14A

File Name:	**e021008b**	**Date of Collection: 2/1/05**	
Dil. Factor:	**1.670**	**Date of Analysis: 2/10/05 03:09 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Isobutane	3300	4200000	7900	10000000
Butane	8400	16000000	20000	38000000
trans-2-butene	3300	64000	7700	150000
1-Butene	3300	Not Detected	7700	Not Detected
cis-2-Butene	3300	21000	7700	48000
Acetylene	8400	Not Detected	8900	Not Detected
Ethene	8400	Not Detected	9600	Not Detected
Propane	8400	100000	15000	180000
Ethane	8400	130000	10000	160000
Propylene	8400	Not Detected	14000	Not Detected

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-EF73

ID#: 0502057D-24A

MODIFIED TO-14A

File Name:	e021009b	Date of Collection:	2/1/05
Dil. Factor:	58.4	Date of Analysis:	2/10/05 03:36 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Isobutane	120	170000	280	400000
Butane	290	640000	690	1500000
trans-2-butene	120	2600	270	5900
1-Butene	120	Not Detected	270	Not Detected
cis-2-Butene	120	840	270	1900
Acetylene	290	Not Detected	310	Not Detected
Ethene	290	Not Detected	330	Not Detected
Propane	290	3900	530	7100
Ethane	290	4800	360	6000
Propylene	290	Not Detected	500	Not Detected

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-IF46

ID#: 0502057F-21A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	**9020721**	**Date of Collection:**	**2/1/05**
Dil. Factor:	**1.49**	**Date of Analysis:**	**2/7/05 12:32 PM**

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.15	0.36
Methane	0.00015	73
Carbon Dioxide	0.015	16

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-EF46

ID#: 0502057F-22A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	9020722	Date of Collection:	2/1/05
Dil. Factor:	1.34	Date of Analysis:	2/7/05 12:53 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.13	21
Methane	0.00013	1.9
Carbon Dioxide	0.013	0.45

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-IF73

ID#: 0502057F-23A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	9020723	Date of Collection:	2/1/05
Dil. Factor:	1.75	Date of Analysis:	2/7/05 01:14 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.18	0.83
Methane	0.00018	67
Carbon Dioxide	0.018	15

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 020105 HCC PSHMW46A-EF73

ID#: 0502057F-24A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name: 9020724	**Date of Collection:** 2/1/05
Dil. Factor: 1.46	**Date of Analysis:** 2/7/05 01:43 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.15	20
Methane	0.00015	2.4
Carbon Dioxide	0.015	0.58

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 020305-HCCPS-HMW46A-EF43

ID#: 0502106A-10A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022410	Date of Collection:	2/3/05
Dil. Factor:	5360	Date of Analysis:	2/24/05 03:30 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	2700	16000	8600	52000
Ethyl Benzene	2700	Not Detected	12000	Not Detected
Styrene	2700	Not Detected	11000	Not Detected
Toluene	2700	Not Detected	10000	Not Detected
1,2,4-Trimethylbenzene	2700	Not Detected	13000	Not Detected
1,3,5-Trimethylbenzene	2700	Not Detected	13000	Not Detected
m,p-Xylene	2700	Not Detected	12000	Not Detected
o-Xylene	2700	Not Detected	12000	Not Detected
Cyclohexane	11000	Not Detected	37000	Not Detected
Cyclopentane	11000	18000	31000	51000
2,2-Dimethylbutane	11000	Not Detected	38000	Not Detected
2,3-Dimethylbutane	11000	42000	38000	150000
2,3-Dimethylpentane	11000	29000	44000	120000
2,4-Dimethylpentane	11000	18000	44000	73000
Heptane	11000	Not Detected	44000	Not Detected
Hexane	11000	46000	38000	160000
Isoprene	11000	Not Detected	30000	Not Detected
Cumene	11000	Not Detected	53000	Not Detected
Isopentane	11000	820000	32000	2400000
Methylcyclohexane	11000	Not Detected	43000	Not Detected
Methylcyclopentane	11000	34000	37000	120000
2-Methylheptane	11000	Not Detected	50000	Not Detected
3-Methylheptane	11000	Not Detected	50000	Not Detected
2-Methylhexane	11000	16000	44000	64000
3-Methylhexane	11000	19000	44000	78000
2-Methylpentane	11000	140000	38000	480000
3-Methylpentane	11000	80000	38000	280000
Nonane	11000	Not Detected	56000	Not Detected
Octane	11000	Not Detected	50000	Not Detected
Pentane	11000	290000	32000	850000
1-Pentene	11000	Not Detected	31000	Not Detected
cis-2-Pentene	11000	Not Detected	31000	Not Detected
trans-2-Pentene	11000	Not Detected	31000	Not Detected
Propylbenzene	11000	Not Detected	53000	Not Detected
2,2,4-Trimethylpentane	11000	22000	50000	100000
2,3,4-Trimethylpentane	11000	Not Detected	50000	Not Detected
1-Hexene	11000	Not Detected	37000	Not Detected
3-Ethyltoluene	11000	Not Detected	53000	Not Detected
4-Ethyltoluene	11000	Not Detected	53000	Not Detected
2-Ethyltoluene	11000	Not Detected	53000	Not Detected
Decane	11000	Not Detected	62000	Not Detected
1,2,3-Trimethylbenzene	11000	Not Detected	53000	Not Detected

AIR TOXICS LTD.

SAMPLE NAME: 020305-HCCPS-HMW46A-EF43

ID#: 0502106A-10A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022410	Date of Collection:	2/3/05
Dil. Factor:	5360	Date of Analysis:	2/24/05 03:30 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Diethylbenzene	11000	Not Detected	59000	Not Detected
1,4-Diethylbenzene	11000	Not Detected	59000	Not Detected
Undecane	11000	Not Detected	68000	Not Detected
cis-2-Hexene	27000	Not Detected	92000	Not Detected
trans-2-Hexene	27000	Not Detected	92000	Not Detected
alpha-Pinene	27000	Not Detected	150000	Not Detected
beta-Pinene	27000	Not Detected	150000	Not Detected
Cyclopentene	11000	Not Detected	30000	Not Detected
1-Undecene	27000	Not Detected	170000	Not Detected
1-Decene	27000	Not Detected	150000	Not Detected
1-Nonene	11000	Not Detected	55000	Not Detected
1-Octene	11000	Not Detected	49000	Not Detected
1-Heptene	11000	Not Detected	43000	Not Detected
1,3-Butadiene	2700	Not Detected	5900	Not Detected
TPH ref. to Gasoline (MW=100)	54000	1600000	220000	6500000

TENTATIVELY IDENTIFIED COMPOUNDS

Compound	CAS Number	Match Quality	Amount ppbv
Dodecane	112-40-3	NA	Not Detected
1-Dodecene	112-41-4	NA	Not Detected
Tridecane	629-50-5	NA	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	91	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	107	70-130

AIR TOXICS LTD.

SAMPLE NAME: 020305-HCCPS-HMW46A-EF43 Duplicate

ID#: 0502106A-10AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022411	Date of Collection:	2/3/05
Dil. Factor:	5360	Date of Analysis:	2/24/05 04:39 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	2700	15000	8600	48000
Ethyl Benzene	2700	Not Detected	12000	Not Detected
Styrene	2700	Not Detected	11000	Not Detected
Toluene	2700	Not Detected	10000	Not Detected
1,2,4-Trimethylbenzene	2700	Not Detected	13000	Not Detected
1,3,5-Trimethylbenzene	2700	Not Detected	13000	Not Detected
m,p-Xylene	2700	Not Detected	12000	Not Detected
o-Xylene	2700	Not Detected	12000	Not Detected
Cyclohexane	11000	Not Detected	37000	Not Detected
Cyclopentane	11000	16000	31000	47000
2,2-Dimethylbutane	11000	Not Detected	38000	Not Detected
2,3-Dimethylbutane	11000	39000	38000	140000
2,3-Dimethylpentane	11000	27000	44000	110000
2,4-Dimethylpentane	11000	18000	44000	72000
Heptane	11000	Not Detected	44000	Not Detected
Hexane	11000	41000	38000	140000
Isoprene	11000	Not Detected	30000	Not Detected
Cumene	11000	Not Detected	53000	Not Detected
Isopentane	11000	790000	32000	2300000
Methylcyclohexane	11000	Not Detected	43000	Not Detected
Methylcyclopentane	11000	34000	37000	120000
2-Methylheptane	11000	Not Detected	50000	Not Detected
3-Methylheptane	11000	Not Detected	50000	Not Detected
2-Methylhexane	11000	14000	44000	59000
3-Methylhexane	11000	18000	44000	73000
2-Methylpentane	11000	130000	38000	460000
3-Methylpentane	11000	74000	38000	260000
Nonane	11000	Not Detected	56000	Not Detected
Octane	11000	Not Detected	50000	Not Detected
Pentane	11000	280000	32000	810000
1-Pentene	11000	Not Detected	31000	Not Detected
cis-2-Pentene	11000	Not Detected	31000	Not Detected
trans-2-Pentene	11000	Not Detected	31000	Not Detected
Propylbenzene	11000	Not Detected	53000	Not Detected
2,2,4-Trimethylpentane	11000	20000	50000	95000
2,3,4-Trimethylpentane	11000	Not Detected	50000	Not Detected
1-Hexene	11000	Not Detected	37000	Not Detected
3-Ethyltoluene	11000	Not Detected	53000	Not Detected
4-Ethyltoluene	11000	Not Detected	53000	Not Detected
2-Ethyltoluene	11000	Not Detected	53000	Not Detected
Decane	11000	Not Detected	62000	Not Detected
1,2,3-Trimethylbenzene	11000	Not Detected	53000	Not Detected

AIR TOXICS LTD.

SAMPLE NAME: 020305-HCCPS-HMW46A-EF43 Duplicate

ID#: 0502106A-10AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022411	Date of Collection:	2/3/05
Dil. Factor:	5360	Date of Analysis:	2/24/05 04:39 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Diethylbenzene	11000	Not Detected	59000	Not Detected
1,4-Diethylbenzene	11000	Not Detected	59000	Not Detected
Undecane	11000	Not Detected	68000	Not Detected
cis-2-Hexene	27000	Not Detected	92000	Not Detected
trans-2-Hexene	27000	Not Detected	92000	Not Detected
alpha-Pinene	27000	Not Detected	150000	Not Detected
beta-Pinene	27000	Not Detected	150000	Not Detected
Cyclopentene	11000	Not Detected	30000	Not Detected
1-Undecene	27000	Not Detected	170000	Not Detected
1-Decene	27000	Not Detected	150000	Not Detected
1-Nonene	11000	Not Detected	55000	Not Detected
1-Octene	11000	Not Detected	49000	Not Detected
1-Heptene	11000	Not Detected	43000	Not Detected
1,3-Butadiene	2700	Not Detected	5900	Not Detected
TPH ref. to Gasoline (MW=100)	54000	1500000	220000	6100000

TENTATIVELY IDENTIFIED COMPOUNDS

Compound	CAS Number	Match Quality	Amount ppbv
Dodecane	112-40-3	NA	Not Detected
1-Dodecene	112-41-4	NA	Not Detected
Tridecane	629-50-5	NA	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	108	70-130

AIR TOXICS LTD.

SAMPLE NAME: 020305-HCCPS-HMW46A-IF43

ID#: 0502106A-11A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022321	Date of Collection:	2/3/05
Dil. Factor:	179000	Date of Analysis:	2/24/05 04:58 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	90000	430000	280000	1400000
Ethyl Benzene	90000	Not Detected	390000	Not Detected
Styrene	90000	Not Detected	380000	Not Detected
Toluene	90000	Not Detected	340000	Not Detected
1,2,4-Trimethylbenzene	90000	Not Detected	440000	Not Detected
1,3,5-Trimethylbenzene	90000	Not Detected	440000	Not Detected
m,p-Xylene	90000	Not Detected	390000	Not Detected
o-Xylene	90000	Not Detected	390000	Not Detected
Cyclohexane	360000	Not Detected	1200000	Not Detected
Cyclopentane	360000	420000	1000000	1200000
2,2-Dimethylbutane	360000	Not Detected	1300000	Not Detected
2,3-Dimethylbutane	360000	1000000	1300000	3600000
2,3-Dimethylpentane	360000	680000	1500000	2800000
2,4-Dimethylpentane	360000	480000	1500000	2000000
Heptane	360000	Not Detected	1500000	Not Detected
Hexane	360000	1100000	1300000	4000000
Isoprene	360000	Not Detected	1000000	Not Detected
Cumene	360000	Not Detected	1800000	Not Detected
Isopentane	360000	24000000	1000000	71000000
Methylcyclohexane	360000	Not Detected	1400000	Not Detected
Methylcyclopentane	360000	980000	1200000	3400000
2-Methylheptane	360000	Not Detected	1700000	Not Detected
3-Methylheptane	360000	Not Detected	1700000	Not Detected
2-Methylhexane	360000	420000	1500000	1700000
3-Methylhexane	360000	480000	1500000	2000000
2-Methylpentane	360000	3500000	1300000	12000000
3-Methylpentane	360000	2000000	1300000	7000000
Nonane	360000	Not Detected	1900000	Not Detected
Octane	360000	Not Detected	1700000	Not Detected
Pentane	360000	8000000	1000000	24000000
1-Pentene	360000	Not Detected	1000000	Not Detected
cis-2-Pentene	360000	Not Detected	1000000	Not Detected
trans-2-Pentene	360000	Not Detected	1000000	Not Detected
Propylbenzene	360000	Not Detected	1800000	Not Detected
2,2,4-Trimethylpentane	360000	570000	1700000	2700000
2,3,4-Trimethylpentane	360000	Not Detected	1700000	Not Detected
1-Hexene	360000	Not Detected	1200000	Not Detected
3-Ethyltoluene	360000	Not Detected	1800000	Not Detected
4-Ethyltoluene	360000	Not Detected	1800000	Not Detected
2-Ethyltoluene	360000	Not Detected	1800000	Not Detected
Decane	360000	Not Detected	2100000	Not Detected
1,2,3-Trimethylbenzene	360000	Not Detected	1800000	Not Detected

AIR TOXICS LTD.

SAMPLE NAME: 020305-HCCPS-HMW46A-IF43

ID#: 0502106A-11A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b022321	Date of Collection:	2/3/05
Dil. Factor:	179000	Date of Analysis:	2/24/05 04:58 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Diethylbenzene	360000	Not Detected	2000000	Not Detected
1,4-Diethylbenzene	360000	Not Detected	2000000	Not Detected
Undecane	360000	Not Detected	2300000	Not Detected
cis-2-Hexene	900000	Not Detected	3100000	Not Detected
trans-2-Hexene	900000	Not Detected	3100000	Not Detected
alpha-Pinene	900000	Not Detected	5000000	Not Detected
beta-Pinene	900000	Not Detected	5000000	Not Detected
Cyclopentene	360000	Not Detected	1000000	Not Detected
1-Undecene	900000	Not Detected	5600000	Not Detected
1-Decene	900000	Not Detected	5100000	Not Detected
1-Nonene	360000	Not Detected	1800000	Not Detected
1-Octene	360000	Not Detected	1600000	Not Detected
1-Heptene	360000	Not Detected	1400000	Not Detected
1,3-Butadiene	90000	Not Detected	200000	Not Detected
TPH ref. to Gasoline (MW=100)	1800000	36000000	7300000	150000000

TENTATIVELY IDENTIFIED COMPOUNDS

Compound	CAS Number	Match Quality	Amount ppbv
Dodecane	112-40-3	NA	Not Detected
1-Dodecene	112-41-4	NA	Not Detected
Tridecane	629-50-5	NA	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	96	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	119	70-130

AIR TOXICS LTD.

SAMPLE NAME: 020305-HCCPS-HMW46A-EF43

ID#: 0502106C-10A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	9020919	Date of Collection:	2/3/05
Dil. Factor:	1.34	Date of Analysis:	2/10/05 12:44 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.13	20
Methane	0.00013	1.7
Carbon Dioxide	0.013	0.54

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 020305-HCCPS-HMW46A-EF43 Duplicate

ID#: 0502106C-10AA

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name: 9020920	Date of Collection: 2/3/05
Dil. Factor: 1.34	Date of Analysis: 2/10/05 01:19 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.13	20
Methane	0.00013	1.7
Carbon Dioxide	0.013	0.54

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 020305-HCCPS-HMW46A-IF43

ID#: 0502106C-11A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	9020921	Date of Collection:	2/3/05
Dil. Factor:	1.79	Date of Analysis:	2/10/05 01:45 AM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.18	0.48
Methane	0.00018	54
Carbon Dioxide	0.018	16

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-IF

ID#: 0502264A-14A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b030618	Date of Collection: 2/10/05
Dil. Factor:	34200	Date of Analysis: 3/7/05 09:01 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	17000	77000	55000	250000
Ethyl Benzene	17000	Not Detected	74000	Not Detected
Styrene	17000	Not Detected	73000	Not Detected
Toluene	17000	Not Detected	64000	Not Detected
1,2,4-Trimethylbenzene	17000	Not Detected	84000	Not Detected
1,3,5-Trimethylbenzene	17000	Not Detected	84000	Not Detected
m,p-Xylene	17000	Not Detected	74000	Not Detected
o-Xylene	17000	Not Detected	74000	Not Detected
Cyclohexane	68000	Not Detected	240000	Not Detected
Cyclopentane	68000	76000	200000	220000
2,2-Dimethylbutane	68000	Not Detected	240000	Not Detected
2,3-Dimethylbutane	68000	180000	240000	640000
2,3-Dimethylpentane	68000	160000	280000	670000
2,4-Dimethylpentane	68000	110000	280000	440000
Heptane	68000	Not Detected	280000	Not Detected
Hexane	68000	Not Detected	240000	Not Detected
Isoprene	68000	Not Detected	190000	Not Detected
Cumene	68000	Not Detected	340000	Not Detected
Isopentane	68000	3400000	200000	10000000
Methylcyclohexane	68000	Not Detected	270000	Not Detected
Methylcyclopentane	68000	180000	240000	620000
2-Methylheptane	68000	Not Detected	320000	Not Detected
3-Methylheptane	68000	Not Detected	320000	Not Detected
2-Methylhexane	68000	Not Detected	280000	Not Detected
3-Methylhexane	68000	73000	280000	300000
2-Methylpentane	68000	500000	240000	1800000
3-Methylpentane	68000	400000	240000	1400000
Nonane	68000	Not Detected	360000	Not Detected
Octane	68000	Not Detected	320000	Not Detected
Pentane	68000	810000	200000	2400000
1-Pentene	68000	Not Detected	200000	Not Detected
cis-2-Pentene	68000	Not Detected	200000	Not Detected
trans-2-Pentene	68000	Not Detected	200000	Not Detected
Propylbenzene	68000	Not Detected	340000	Not Detected
2,2,4-Trimethylpentane	68000	140000	320000	680000
2,3,4-Trimethylpentane	68000	Not Detected	320000	Not Detected
1-Hexene	68000	Not Detected	240000	Not Detected
3-Ethyltoluene	68000	Not Detected	340000	Not Detected
4-Ethyltoluene	68000	Not Detected	340000	Not Detected
2-Ethyltoluene	68000	Not Detected	340000	Not Detected
Decane	68000	Not Detected	400000	Not Detected
1,2,3-Trimethylbenzene	68000	Not Detected	340000	Not Detected

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-IF

ID#: 0502264A-14A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b030618	Date of Collection:	2/10/05
Dil. Factor:	34200	Date of Analysis:	3/7/05 09:01 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Diethylbenzene	68000	Not Detected	370000	Not Detected
1,4-Diethylbenzene	68000	Not Detected	380000	Not Detected
Undecane	68000	Not Detected	440000	Not Detected
cis-2-Hexene	170000	Not Detected	590000	Not Detected
trans-2-Hexene	170000	Not Detected	590000	Not Detected
alpha-Pinene	170000	Not Detected	950000	Not Detected
beta-Pinene	170000	Not Detected	950000	Not Detected
Cyclopentene	68000	Not Detected	190000	Not Detected
1-Undecene	170000	Not Detected	1100000	Not Detected
1-Decene	170000	Not Detected	980000	Not Detected
1-Nonene	68000	Not Detected	350000	Not Detected
1-Octene	68000	Not Detected	310000	Not Detected
1-Heptene	68000	Not Detected	270000	Not Detected
1,3-Butadiene	17000	Not Detected	38000	Not Detected
TPH ref. to Gasoline (MW=100)	340000	4700000	1400000	19000000

TENTATIVELY IDENTIFIED COMPOUNDS

Compound	CAS Number	Match Quality	Amount ppbv
Dodecane	112-40-3	NA	Not Detected
1-Dodecene	112-41-4	NA	Not Detected
Tridecane	629-50-5	NA	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	92	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	111	70-130

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-IF Duplicate

ID#: 0502264A-14AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b030619	Date of Collection: 2/10/05
Dil. Factor:	34200	Date of Analysis: 3/7/05 09:59 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	17000	73000	55000	230000
Ethyl Benzene	17000	Not Detected	74000	Not Detected
Styrene	17000	Not Detected	73000	Not Detected
Toluene	17000	Not Detected	64000	Not Detected
1,2,4-Trimethylbenzene	17000	Not Detected	84000	Not Detected
1,3,5-Trimethylbenzene	17000	Not Detected	84000	Not Detected
m,p-Xylene	17000	Not Detected	74000	Not Detected
o-Xylene	17000	Not Detected	74000	Not Detected
Cyclohexane	68000	Not Detected	240000	Not Detected
Cyclopentane	68000	72000	200000	210000
2,2-Dimethylbutane	68000	Not Detected	240000	Not Detected
2,3-Dimethylbutane	68000	180000	240000	630000
2,3-Dimethylpentane	68000	160000	280000	640000
2,4-Dimethylpentane	68000	100000	280000	420000
Heptane	68000	Not Detected	280000	Not Detected
Hexane	68000	Not Detected	240000	Not Detected
Isoprene	68000	Not Detected	190000	Not Detected
Cumene	68000	Not Detected	340000	Not Detected
Isopentane	68000	3400000	200000	10000000
Methylcyclohexane	68000	Not Detected	270000	Not Detected
Methylcyclopentane	68000	170000	240000	600000
2-Methylheptane	68000	Not Detected	320000	Not Detected
3-Methylheptane	68000	Not Detected	320000	Not Detected
2-Methylhexane	68000	Not Detected	280000	Not Detected
3-Methylhexane	68000	68000	280000	280000
2-Methylpentane	68000	480000	240000	1700000
3-Methylpentane	68000	390000	240000	1400000
Nonane	68000	Not Detected	360000	Not Detected
Octane	68000	Not Detected	320000	Not Detected
Pentane	68000	770000	200000	2300000
1-Pentene	68000	Not Detected	200000	Not Detected
cis-2-Pentene	68000	Not Detected	200000	Not Detected
trans-2-Pentene	68000	Not Detected	200000	Not Detected
Propylbenzene	68000	Not Detected	340000	Not Detected
2,2,4-Trimethylpentane	68000	140000	320000	660000
2,3,4-Trimethylpentane	68000	Not Detected	320000	Not Detected
1-Hexene	68000	Not Detected	240000	Not Detected
3-Ethyltoluene	68000	Not Detected	340000	Not Detected
4-Ethyltoluene	68000	Not Detected	340000	Not Detected
2-Ethyltoluene	68000	Not Detected	340000	Not Detected
Decane	68000	Not Detected	400000	Not Detected
1,2,3-Trimethylbenzene	68000	Not Detected	340000	Not Detected

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-IF Duplicate

ID#: 0502264A-14AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b030619	**Date of Collection:**	2/10/05
Dil. Factor:	34200	**Date of Analysis:**	3/7/05 09:59 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Diethylbenzene	68000	Not Detected	370000	Not Detected
1,4-Diethylbenzene	68000	Not Detected	380000	Not Detected
Undecane	68000	Not Detected	440000	Not Detected
cis-2-Hexene	170000	Not Detected	590000	Not Detected
trans-2-Hexene	170000	Not Detected	590000	Not Detected
alpha-Pinene	170000	Not Detected	950000	Not Detected
beta-Pinene	170000	Not Detected	950000	Not Detected
Cyclopentene	68000	Not Detected	190000	Not Detected
1-Undecene	170000	Not Detected	1100000	Not Detected
1-Decene	170000	Not Detected	980000	Not Detected
1-Nonene	68000	Not Detected	350000	Not Detected
1-Octene	68000	Not Detected	310000	Not Detected
1-Heptene	68000	Not Detected	270000	Not Detected
1,3-Butadiene	17000	Not Detected	38000	Not Detected
TPH ref. to Gasoline (MW=100)	340000	4500000	1400000	18000000

TENTATIVELY IDENTIFIED COMPOUNDS

Compound	CAS Number	Match Quality	Amount ppbv
Dodecane	112-40-3	NA	Not Detected
1-Dodecene	112-41-4	NA	Not Detected
Tridecane	629-50-5	NA	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	112	70-130

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-EF

ID#: 0502264A-15A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b030620	Date of Collection:	2/10/05
Dil. Factor:	2540	Date of Analysis:	3/7/05 10:57 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	1300	5900	4000	19000
Ethyl Benzene	1300	Not Detected	5500	Not Detected
Styrene	1300	Not Detected	5400	Not Detected
Toluene	1300	6800	4800	26000
1,2,4-Trimethylbenzene	1300	Not Detected	6200	Not Detected
1,3,5-Trimethylbenzene	1300	Not Detected	6200	Not Detected
m,p-Xylene	1300	Not Detected	5500	Not Detected
o-Xylene	1300	Not Detected	5500	Not Detected
Cyclohexane	5100	Not Detected	17000	Not Detected
Cyclopentane	5100	6000	14000	17000
2,2-Dimethylbutane	5100	Not Detected	18000	Not Detected
2,3-Dimethylbutane	5100	15000	18000	53000
2,3-Dimethylpentane	5100	13000	21000	54000
2,4-Dimethylpentane	5100	8300	21000	34000
Heptane	5100	Not Detected	21000	Not Detected
Hexane	5100	Not Detected	18000	Not Detected
Isoprene	5100	Not Detected	14000	Not Detected
Cumene	5100	Not Detected	25000	Not Detected
Isopentane	5100	280000	15000	840000
Methylcyclohexane	5100	Not Detected	20000	Not Detected
Methylcyclopentane	5100	14000	17000	48000
2-Methylheptane	5100	Not Detected	24000	Not Detected
3-Methylheptane	5100	Not Detected	24000	Not Detected
2-Methylhexane	5100	Not Detected	21000	Not Detected
3-Methylhexane	5100	5300	21000	22000
2-Methylpentane	5100	41000	18000	140000
3-Methylpentane	5100	32000	18000	110000
Nonane	5100	Not Detected	27000	Not Detected
Octane	5100	Not Detected	24000	Not Detected
Pentane	5100	69000	15000	200000
1-Pentene	5100	Not Detected	14000	Not Detected
cis-2-Pentene	5100	Not Detected	14000	Not Detected
trans-2-Pentene	5100	Not Detected	14000	Not Detected
Propylbenzene	5100	Not Detected	25000	Not Detected
2,2,4-Trimethylpentane	5100	11000	24000	53000
2,3,4-Trimethylpentane	5100	Not Detected	24000	Not Detected
1-Hexene	5100	Not Detected	17000	Not Detected
3-Ethyltoluene	5100	Not Detected	25000	Not Detected
4-Ethyltoluene	5100	Not Detected	25000	Not Detected
2-Ethyltoluene	5100	Not Detected	25000	Not Detected
Decane	5100	Not Detected	30000	Not Detected
1,2,3-Trimethylbenzene	5100	Not Detected	25000	Not Detected

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-EF

ID#: 0502264A-15A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b030620	Date of Collection:	2/10/05
Dil. Factor:	2540	Date of Analysis:	3/7/05 10:57 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Diethylbenzene	5100	Not Detected	28000	Not Detected
1,4-Diethylbenzene	5100	Not Detected	28000	Not Detected
Undecane	5100	Not Detected	32000	Not Detected
cis-2-Hexene	13000	Not Detected	44000	Not Detected
trans-2-Hexene	13000	Not Detected	44000	Not Detected
alpha-Pinene	13000	Not Detected	71000	Not Detected
beta-Pinene	13000	Not Detected	71000	Not Detected
Cyclopentene	5100	Not Detected	14000	Not Detected
1-Undecene	13000	Not Detected	80000	Not Detected
1-Decene	13000	Not Detected	73000	Not Detected
1-Nonene	5100	Not Detected	26000	Not Detected
1-Octene	5100	Not Detected	23000	Not Detected
1-Heptene	5100	Not Detected	20000	Not Detected
1,3-Butadiene	1300	Not Detected	2800	Not Detected
TPH ref. to Gasoline (MW=100)	25000	530000	100000	2200000

TENTATIVELY IDENTIFIED COMPOUNDS

Compound	CAS Number	Match Quality	Amount ppbv
Dodecane	112-40-3	87%	7300 N J
1-Dodecene	112-41-4	NA	Not Detected
Tridecane	629-50-5	NA	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	120	70-130

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-EF Duplicate

ID#: 0502264A-15AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b030621	Date of Collection: 2/10/05
Dil. Factor:	2540	Date of Analysis: 3/7/05 12:06 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	1300	5800	4000	18000
Ethyl Benzene	1300	Not Detected	5500	Not Detected
Styrene	1300	Not Detected	5400	Not Detected
Toluene	1300	6200	4800	23000
1,2,4-Trimethylbenzene	1300	Not Detected	6200	Not Detected
1,3,5-Trimethylbenzene	1300	Not Detected	6200	Not Detected
m,p-Xylene	1300	Not Detected	5500	Not Detected
o-Xylene	1300	Not Detected	5500	Not Detected
Cyclohexane	5100	Not Detected	17000	Not Detected
Cyclopentane	5100	6100	14000	17000
2,2-Dimethylbutane	5100	Not Detected	18000	Not Detected
2,3-Dimethylbutane	5100	15000	18000	52000
2,3-Dimethylpentane	5100	12000	21000	51000
2,4-Dimethylpentane	5100	8400	21000	34000
Heptane	5100	Not Detected	21000	Not Detected
Hexane	5100	Not Detected	18000	Not Detected
Isoprene	5100	Not Detected	14000	Not Detected
Cumene	5100	Not Detected	25000	Not Detected
Isopentane	5100	280000	15000	830000
Methylcyclohexane	5100	Not Detected	20000	Not Detected
Methylcyclopentane	5100	13000	17000	46000
2-Methylheptane	5100	Not Detected	24000	Not Detected
3-Methylheptane	5100	Not Detected	24000	Not Detected
2-Methylhexane	5100	Not Detected	21000	Not Detected
3-Methylhexane	5100	5400	21000	22000
2-Methylpentane	5100	41000	18000	140000
3-Methylpentane	5100	31000	18000	110000
Nonane	5100	Not Detected	27000	Not Detected
Octane	5100	Not Detected	24000	Not Detected
Pentane	5100	68000	15000	200000
1-Pentene	5100	Not Detected	14000	Not Detected
cis-2-Pentene	5100	Not Detected	14000	Not Detected
trans-2-Pentene	5100	Not Detected	14000	Not Detected
Propylbenzene	5100	Not Detected	25000	Not Detected
2,2,4-Trimethylpentane	5100	11000	24000	52000
2,3,4-Trimethylpentane	5100	Not Detected	24000	Not Detected
1-Hexene	5100	Not Detected	17000	Not Detected
3-Ethyltoluene	5100	Not Detected	25000	Not Detected
4-Ethyltoluene	5100	Not Detected	25000	Not Detected
2-Ethyltoluene	5100	Not Detected	25000	Not Detected
Decane	5100	Not Detected	30000	Not Detected
1,2,3-Trimethylbenzene	5100	Not Detected	25000	Not Detected

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-EF Duplicate

ID#: 0502264A-15AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b030621	Date of Collection:	2/10/05
Dil. Factor:	2540	Date of Analysis:	3/7/05 12:06 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Diethylbenzene	5100	Not Detected	28000	Not Detected
1,4-Diethylbenzene	5100	Not Detected	28000	Not Detected
Undecane	5100	Not Detected	32000	Not Detected
cis-2-Hexene	13000	Not Detected	44000	Not Detected
trans-2-Hexene	13000	Not Detected	44000	Not Detected
alpha-Pinene	13000	Not Detected	71000	Not Detected
beta-Pinene	13000	Not Detected	71000	Not Detected
Cyclopentene	5100	Not Detected	14000	Not Detected
1-Undecene	13000	Not Detected	80000	Not Detected
1-Decene	13000	Not Detected	73000	Not Detected
1-Nonene	5100	Not Detected	26000	Not Detected
1-Octene	5100	Not Detected	23000	Not Detected
1-Heptene	5100	Not Detected	20000	Not Detected
1,3-Butadiene	1300	Not Detected	2800	Not Detected
TPH ref. to Gasoline (MW=100)	25000	460000	100000	1900000

TENTATIVELY IDENTIFIED COMPOUNDS

Compound	CAS Number	Match Quality	Amount ppbv
Dodecane	112-40-3	NA	Not Detected
1-Dodecene	112-41-4	NA	Not Detected
Tridecane	629-50-5	NA	Not Detected

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	94	70-130
4-Bromofluorobenzene	120	70-130

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-EX

ID#: 0502264A-16A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b030622	Date of Collection:	2/10/05
Dil. Factor:	10.3	Date of Analysis:	3/7/05 12:55 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Benzene	5.2	94	16	300
Ethyl Benzene	5.2	34	22	140
Styrene	5.2	Not Detected	22	Not Detected
Toluene	5.2	Not Detected	19	Not Detected
1,2,4-Trimethylbenzene	5.2	98	25	480
1,3,5-Trimethylbenzene	5.2	25	25	120
m,p-Xylene	5.2	68	22	300
o-Xylene	5.2	Not Detected	22	Not Detected
Cyclohexane	21	Not Detected	71	Not Detected
Cyclopentane	21	Not Detected	59	Not Detected
2,2-Dimethylbutane	21	Not Detected	73	Not Detected
2,3-Dimethylbutane	21	Not Detected	73	Not Detected
2,3-Dimethylpentane	21	51	84	210
2,4-Dimethylpentane	21	Not Detected	84	Not Detected
Heptane	21	Not Detected	84	Not Detected
Hexane	21	Not Detected	73	Not Detected
Isoprene	21	Not Detected	57	Not Detected
Cumene	21	Not Detected	100	Not Detected
Isopentane	21	Not Detected	61	Not Detected
Methylcyclohexane	21	21	83	86
Methylcyclopentane	21	41	71	140
2-Methylheptane	21	Not Detected	96	Not Detected
3-Methylheptane	21	Not Detected	96	Not Detected
2-Methylhexane	21	Not Detected	84	Not Detected
3-Methylhexane	21	26	84	110
2-Methylpentane	21	56	73	200
3-Methylpentane	21	52	73	180
Nonane	21	Not Detected	110	Not Detected
Octane	21	Not Detected	96	Not Detected
Pentane	21	53	61	160
1-Pentene	21	24	59	68
cis-2-Pentene	21	Not Detected	59	Not Detected
trans-2-Pentene	21	Not Detected	59	Not Detected
Propylbenzene	21	53	100	260
2,2,4-Trimethylpentane	21	43	96	200
2,3,4-Trimethylpentane	21	Not Detected	96	Not Detected
1-Hexene	21	23	71	79
3-Ethyltoluene	21	Not Detected	100	Not Detected
4-Ethyltoluene	21	28	100	140
2-Ethyltoluene	21	35	100	170
Decane	21	Not Detected	120	Not Detected
1,2,3-Trimethylbenzene	21	38	100	180

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-EX

ID#: 0502264A-16A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	b030622	Date of Collection:	2/10/05
Dil. Factor:	10.3	Date of Analysis:	3/7/05 12:55 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
1,3-Diethylbenzene	21	32	110	180
1,4-Diethylbenzene	21	48	110	260
Undecane	21	Not Detected	130	Not Detected
cis-2-Hexene	52	Not Detected	180	Not Detected
trans-2-Hexene	52	Not Detected	180	Not Detected
alpha-Pinene	52	Not Detected	290	Not Detected
beta-Pinene	52	Not Detected	290	Not Detected
Cyclopentene	21	Not Detected	57	Not Detected
1-Undecene	52	Not Detected	320	Not Detected
1-Decene	52	Not Detected	300	Not Detected
1-Nonene	21	Not Detected	110	Not Detected
1-Octene	21	Not Detected	94	Not Detected
1-Heptene	21	Not Detected	83	Not Detected
1,3-Butadiene	5.2	Not Detected	11	Not Detected
TPH ref. to Gasoline (MW=100)	100	6000	420	24000

TENTATIVELY IDENTIFIED COMPOUNDS

Compound	CAS Number	Match Quality	Amount ppbv
Dodecane	112-40-3	NA	Not Detected
1-Dodecene	112-41-4	NA	Not Detected
Tridecane	629-50-5	NA	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	93	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	112	70-130

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-IF

ID#: 0502264B-14A

MODIFIED TO-14A

File Name:	e021521b	Date of Collection:	2/10/05
Dil. Factor:	137	Date of Analysis:	2/16/05 12:12 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Isobutane	270	540000	650	1300000
Butane	680	1300000	1600	3000000
trans-2-butene	270	4000	630	9300
1-Butene	270	380	630	880
cis-2-Butene	270	1600	630	3700
Acetylene	680	Not Detected	730	Not Detected
Ethene	680	Not Detected	780	Not Detected
Propane	680	8200	1200	15000
Ethane	680	12000	840	15000
Propylene	680	Not Detected	1200	Not Detected

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-IF Duplicate

ID#: 0502264B-14AA

MODIFIED TO-14A

File Name:	e0215225	Date of Collection:	2/10/05
Dil. Factor:	137	Date of Analysis:	2/16/05 12:45 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Isobutane	270	550000	650	1300000
Butane	680	1300000	1600	3000000
trans-2-butene	270	4000	630	9200
1-Butene	270	360	630	840
cis-2-Butene	270	1600	630	3600
Acetylene	680	Not Detected	730	Not Detected
Ethene	680	Not Detected	780	Not Detected
Propane	680	8200	1200	15000
Ethane	680	12000	840	15000
Propylene	680	Not Detected	1200	Not Detected

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-EF

ID#: 0502264B-15A

MODIFIED TO-14A

File Name:	**e021523b**	**Date of Collection: 2/10/05**	
Dil. Factor:	**11.0**	**Date of Analysis: 2/16/05 01:12 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Isobutane	22	47000	52	110000
Butane	55	110000	130	260000
trans-2-butene	22	350	50	810
1-Butene	22	33	50	76
cis-2-Butene	22	140	50	320
Acetylene	55	Not Detected	58	Not Detected
Ethene	55	Not Detected	63	Not Detected
Propane	55	760	99	1400
Ethane	55	1100	68	1400
Propylene	55	Not Detected	95	Not Detected

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-EX

ID#: 0502264B-16A

MODIFIED TO-14A

File Name:	e021517b	**Date of Collection:**	2/10/05
Dil. Factor:	1.29	**Date of Analysis:**	2/15/05 04:52 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Isobutane	2.6	14	6.1	32
Butane	6.4	42	15	99
trans-2-butene	2.6	6.1	5.9	14
1-Butene	2.6	38	5.9	88
cis-2-Butene	2.6	4.4	5.9	10
Acetylene	6.4	17	6.9	18
Ethene	6.4	290	7.4	330
Propane	6.4	500	12	900
Ethane	6.4	7.4	7.9	9.1
Propylene	6.4	160	11	270

Container Type: 6 Liter Summa Canister (SIM Certified)

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-IF

ID#: 0502264C-14A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name: 9021421	Date of Collection: 2/10/05
Dil. Factor: 1.71	Date of Analysis: 2/14/05 01:57 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.17	13
Methane	0.00017	6.8
Carbon Dioxide	0.017	5.4

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-EF

ID#: 0502264C-15A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	9021422	**Date of Collection:**	2/10/05
Dil. Factor:	1.27	**Date of Analysis:**	2/14/05 02:19 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.13	21
Methane	0.00013	0.56
Carbon Dioxide	0.013	0.48

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-EF Duplicate

ID#: 0502264C-15AA

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	9021424	Date of Collection:	2/10/05
Dil. Factor:	1.27	Date of Analysis:	2/14/05 03:07 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.13	21
Methane	0.00013	0.56
Carbon Dioxide	0.013	0.48

Container Type: 6 Liter Summa Canister

AIR TOXICS LTD.

SAMPLE NAME: 021005-HCCPS-HSVE20-EX

ID#: 0502264C-16A

MODIFIED NATURAL GAS ANALYSIS BY ASTM D-1946

File Name:	9021423	Date of Collection:	2/10/05
Dil. Factor:	1.29	Date of Analysis:	2/14/05 02:45 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.13	16
Methane	0.00013	Not Detected
Carbon Dioxide	0.013	3.5

Container Type: 6 Liter Summa Canister (SIM Certified)

APPENDIX E

HAND CALCULATIONS – TPH GASOLINE REMOVAL RATES

Clayton GROUP SERVICES
3140 Finley Road, Downers Grove, IL 60515
(630) 795-3200 Fax (630) 795-1130

SHEET NO. 1 OF 2
PROJECT 15-03095.13-005
DATE 3/22/05
BY BKM CKD

Hartford Working Group
TPH (gasoline) Extraction Calculation

TPH Removal Rate

$R_r = C_v \times Q \times MW \times 1.581 \times 10^{-7}$

C_v = TPH concentration in ppmv

Q = Flow rate cfm

MW = molecular weight of gasoline

Vacuum = 43" H_2O HMW-46A

$C_v = 43{,}000$

$Q = 30$ cfm

MW = 66 lb./lb-mole

$R_R = 43{,}000 \times \overset{30}{\cancel{60}} \times 66 \times 1.581 \times 10^{-7}$

$R_R = \overset{13.46}{\cancel{26.9}}$ lb./hr

$= \overset{323}{\cancel{646}}$ lb./day

Vacuum = ~~78~~" H_2O HMW-46A

$R_R = 49{,}000 \times 35 \times 66 \times 1.581 \times 10^{-7}$

$R_R = 17.9$ lb./hr.

$= 429$ lb./day

Vacuum = 100" H_2O HMW-46A

$R_R = 36{,}000 \times 50 \times 66 \times 1.581 \times 10^{-7}$

$R_R = 18.8$ lb./hr.

$= 450$ lb./day

Clayton® GROUP SERVICES
3140 Finley Road, Downers Grove, IL 60515
(630) 795-3200 Fax (630) 795-1130

SHEET NO. 2 OF 2
PROJECT 15-03095.13-005
DATE 3/22/05
BY BKM CKD

Hartford Working Group
TPH (Gasoline) Extraction Rate

Vacuum = 100" H_2O HSVE-20

$R_R = 4,700 \times 50 \times 46 \times 1.581 \times 10^{-7}$

$= 2.5$ lb./hr.

$= 58$ lb/day